June 16, 1982

Dear Alan:

Following are some incidental thoughts.

- About ten days ago I attended a very interesting panel discussion at the "First International Visual Music Festival." Panel members included Ed Emshwiller, John Whitney, James Blinn and Dave Em. Most interesting at this particular session was Whitney who talked about the development of visual music. He was using the phrase not to mean pictures + sound, but as an analogy to aural music. He is now working on the development of an equivalent to musical notation, scales, etc. for visuals. As I understand it, he is working toward a system that will produce visuals in real-time the way musical instruments (including voice) produce sound. [Our ears have a complementary output device - the mouth or even clapping hands - but our eyes alas have none - at least not one that you can play in real time].

  I mention this because I find it interesting in its own right, but also because of something I thought of later, when I heard that James Blinn is teaching a course in computer graphics/art at the Pasadena Art Museum this summer. He'll be using Ataris loaned by the Atari Institute. Why don't we seek out others like Whitney and Emshwiller and if they are interested lend them Atari systems for use with their students (Whitney is at UCLA, Emshwiller at Cal Arts). At the least it would open up a potentially significant dialogue between these artists and Atari. At best, they and their students might actually push out the boundaries of what can be done with existing hardware and help shape future developments as well.

  Blinn has never used an Atari before. It should be very interesting to talk with him after the summer and hear his summation. I'm going to arrange to go to his class one night.

- Let's do some <u>informal</u> research into how people use existing, commercially available systems (Compuserve, The Source, Dialog, videodisc players, encyclopaedias). The basic purpose would not be to produce publishable research but to provide useful data which we can chew over to sharpen our gut instincts during the initial stages. We don't want to come up with a "last word"

as much as help in formulating the design of early products which shouldn't/ can't wait years for research results. Put another way, it looks like much of the long term research for the "intelligent encyclopedia" will be based on actual products that we put on the market in the next several years. The point here is to do some "guerilla" research to help get the initial products off in the right direction. Among the things we could do are:

- focus group interviews with users of Compuserve, The Source, Nexus, Dialog etc.
- observation of experienced and novice users of these same online systems
- observation of people using encyclopedias; both trained and untrained people, each looking up the same facts, ideas etc.
- observation of children and adults using various videodiscs [How about putting a player at one of the camps, perhaps with an interface for the Atari]

We could do this with a couple of sharp college/graduate students plus a minimal amount of money for organizing and carrying out the work. A lot could be done with $10,000 or so over a three month period.

- Probably the most interesting thing I saw at CES was a private showing by RCA of their videodisc player reconfigured to do everything that the laser system will do and then some (mainly greater capacity). The laser system has an inherent elegance that makes it more attractive, however what is important here is that for all intents and purposes, program producers will soon be freed of having to make the "heads you win, tails I lose" choice between the sophisticated programming possible with the laser system (and VHD) and the broader market represented by RCA. The same program will basically be transferable to all three formats.

- I am making good progress in learning about TIES, QUBE, etc. Unfortunately the more I learn the stickier things look. To make it short, as presently configured the QUBE systems are not capable of any significant two-way communications - unless you want to call 150 bits per minute (including bits for address and error correction) significant. As I understand it now, even if a lot of money were spent to increase the amount of upstream (to the head end) data flow, or if you were to adopt a hybrid system using the telephone for upstream communication, there would still be the question of where you are going to get the

prodigious amount of computer power necessary to deal with the wide range of sophisticated services being offered to thousands upon thousands of subscribers in a given area.

I am looking forward to extensive discussions in NY with people from QUBE, TIES etc, to try to nail some of this down. I think it would be good if someone else from the research group (either from Sunnyvale or NY) could go with me to some of these meetings. I have a pretty good sense of what we want to do, but am still weak on a lot of the technical questions. If there is anyone with a decent understanding of at least basic telecommunications practice and theory, together we might be able to get a fairly sharp picture of what is going on. The more I get into it the more I realize how important this is, since it would not serve us well to assume that "xyz" is going to be in place as a delivery system, if that's not true - and it may not be. Perhaps we could even influence the direction things take.

June 16, 1982

Dear Alan:

Following is a brief outline describing certain aspects of a possible scenario for what we might want to do. It's sketchy and tenuous but should be enough to get us started at tomorrow's meeting.

This particular conception was shaped in large part by trying to come up with satisfactory solutions to three problems:

1. The need to reconcile the incredibly long development time needed for the intelligent encyclopedia with our desire to put something on the market relatively soon.
2. The high developmental cost of the intelligent encyclopedia (probably making it necessary to try to use some of the components in more than one product).
3. The relatively low level of practical understanding of what the encyclopedia should "look like" - ie. the need to do a lot of experimentation along the way.

Taken together these three all seem to point in the direction of developing the encyclopedia in the context of a more broadly conceived publishing company. Although its most significant product/service would be the encyclopedia, this company would be a publisher of a broad range of products all of which would center on the use of new technologies to provide rich learning opportunities and/or sophisticated information retrieval. Efforts will be aimed principally at the consumer market, but will have definite appeal to the school and library market as well as the business community. While being closely linked with and identified with Atari, the products should be hardware independent - perhaps they will work "better" on Atari machines, but they should be accessible to people with Apples etc. From the beginning the company should be international, at least in perspective.

The basic strategy is to develop both short and long term products in parallel. At the very least the short and long term products should be complementary. Whether it is feasible for the initial online system (discussed below) to actually evolve directly into the intelligent encyclopedia must be considered in some depth.

The short term products (actually a misnomer since as conceived here, we wouldn't necessarily stop producing certain "short term" products like videodisc programs after the intelligent encyclopedia is a reality) need to do the following:

Structure of "The Company" and the Role of EB

We need one company which will oversee, coordinate and guide all the work described above (including questions of marketing and distribution. This company could either be a subsidiary of Atari or a joint venture with EB or another company. Van Doren is convinced that Swanson would prefer simply to have Atari pay EB a royalty and not enter into a joint venture. Frankly, given that what we are talking about becomes the future of EB, I can't imagine that the more farsighted members of the board will be content to turn EB into a coupon clipping company that just collects royalty payments. On the other hand, since Atari will be putting up most of the money anyway, I don't see where it is in Atari's interests to have a joint venture with EB if you can get everything you need from them just by paying royalties. In any case, if Atari's initial offer is simply to pay royalties (+ the right to buy a limited amount of stock) and it turns out EB doesn't like that, Atari can always fall back on the joint venture arrangement. The one tricky thing is that if it is not a joint venture, we need to decide what EB will receive royalties on - all products or just those bearing the EB name. For example, suppose we do a videodisc with Lucasfilm and the Smithsonian on dinosaurs, would we want to or be disposed to pay a royalty to EB if they are not part of the overall joint venture. I think not. In any case we need to bring in some of the business people to take up the question of formulas for royalties etc.

Assuming for the moment that EB agrees to a royalty arrangement Atari should require the following from EB.

EB would be expected to:

- give Atari exclusive access to all EB encyclopedias and not permit the EB name to be associated with any other electronic encyclopedia
- provide some personnel knowledgeable in the methodology of encyclopedia creation; access to all relevant EB files and facilities
- use good offices to enlist the participation of scholars and experts
- sell and promote the products of The Company (and perhaps other Atari products) through its direct sales staff

- audiotex
- "answer machine" (By prompting the user to formulate questions using a well-defined who, what, when, where, why structure it might be possible to mimic a natural language query system. Fill in the blanks:"Who __(verb)__ the __(noun)__?
- user contact with system, permitting user feedback, direct assistance, and/or communication with other users
- gateway to other information services
- a videodisc picture bank for illustrations
- direct link to existing videodisc programs; ie. online encyclopedia refers user to existing videodisc program (eg. the dinosaur disc) and then if the user has the disc, he can incorporate it into encyclopedia, using online component to "drive" disc.
- dictionary (EB owns Merriam Webster)

Intelligent Encyclopedia -

Right from the beginning, separate from any work done on the short term products, work will be begun on the intelligent encyclopedia. In the main, the task of developing the encyclopedia will be entrusted to a specially created institute responsible both for basic research into the numerous questions relating to the precise nature of an intelligent encyclopedia and for coordinating and guiding the creation of the content itself. [How Atari corporate research fits into this needs to be worked out]. The institute will be located at or near a major university. Cambridge or Palo Alto seem to be likely candidates since the university in question needs to have significant depth across all departments plus particular strength in the area of computer science, telecommunications and education or learning theory.

Considerable attention must be paid to how to integrate the work on the short term products with the work on the intelligent encyclopedia. Out of necessity these will have to be somewhat separate enterprises, but significant cross-pollination is crucial.

* (from preceding page) - Van Doren suggested that the online encyclopedia include only the Micropedia, and that users wanting Macropedia articles could send for them by mail. His rationale here was that he didn't want to compete with EB itself and that the long Macropedia articles might be out of place in an online system. Since I am assuming that the interface for the system will permit easy management of the contents, I tend to discount the second concern. The first is a point for negotiation. I don't think we care if the online encyclopedia competes with the paper EB. However, perhaps for technical reasons we would prefer a smaller database.

- provide a lot of the experience necessary for development of the intelligent encyclopedia
- provide material which can be incorporated into the intelligent encyclopedia (video sequences, computer simulations etc.)
- generate income

The short term products fall into two basic categories - videodisc and computer programs capable of standing on their own and an online encyclopedia based on existing EB materials. (see note marked by * at bottom of next page)

Videodisc and Computer Programs -

Use videodisc and computer (both alone and together) to provide broad range of programs, appealing to children and adults (not necessarily the same programs). Concentrate on "what-if" learning, simulations and limited encyclopedic applications - eg. videodisc encyclopedia of dinosaurs or a child's introduction to space exploration.

It is likely that the new company we're talking about would enter into various joint ventures to finance, develop (and distribute) these products. For example, some might be produced with Lucasfilm, CTW, Disney etc. In theory, these programs if done well and marketed intelligently can be money makers relatively early on.

Online Encyclopedia -

Aim for producing an online product based on existing EB materials within three years. The third year to include extensive testing and refining of service (test to be conducted by offering service to all potential users in a given geographical area - eg. all QUBE subscribers in Columbus or all Santa Monica residents.

The method of delivery (whether cable or phone co.) during the test phase and beyond needs to be determined later, when there is a lot more understanding of the issues.

Sold on a subscription basis (although heavy individual and institutional users might be required to pay a surcharge) this service will take some time to recoup its investment, although, again in theory, it should by a certain time at least start to pay for itself, even if it is not able to pay back the entire investment before it is replaced with the intelligent encyclopedia.

Minimum features of system
- full text searching
- browsing capability
- at least two modes, child and adult (perhaps drawing on text from Comptons in the first case and EB in the second

Possible enhancements
- semantic roadmaps (I want to be able at any time to push a button and flip to a semantic map which shows me graphically where I am in the domain and where I could go from here) - This may actually be the key to browsing.

From Bob Stein

June 24, 1982

Dear Alan:

Following is a summary of several phone conversations on the Britannica/World Book issue. It's a sticky situation but in the long run it may turn out to be a good thing if it forces us to sharpen our understanding of what we want to do and who we want to do it with.

Van Doren called on Tuesday morning rather agitated about the whole World Book (WB) question. Evidently what kicked off this latest round of concern was that Ray Markman of Britannica had met with Chris Bowman and was given the impression that discussions with WB had proceeded quite a long way toward a deal etc. On Wednesday there were to be two important meetings at EB relative to Atari - the bi-monthly meeting of the New Business Committee and a highly unusual luncheon hosted by Gwinn for Swanson, Van Doren and Sloan, ~~expressly to discuss Atari~~. Van Doren was hoping for some word from Atari before Wednesday indicating at least that nothing imminent was happening with WB and perhaps that the World Book deal was "on hold." I told Van Doren I would do what I could to get some word from Atari, if indeed it was deemed appropriate. In your absence I decided to call Ray Kassar's office to pass on the Van Doren phone call and request. Before calling Mr. Kassar I called Chris Bowman to familiarize myself with that end of the story. For your information, Chris explained the following:

The original contact with WB was through Jim Page, the Educational Sales Manager for HCD. Initial discussions centered on WB becoming a dealer/distributor of Atari hardware and software. WB would use its direct-to-the-home-and-school sales force. Additionally WB wanted to have an exclusive on some software so that they could find a way to distinguish themselves from everyone else selling Atari products, since given the high commission paid to door-to-door salesmen, WB's prices on the hardware wouldn't be all that competitive. Chris mentioned the MECC materials as a candidate for an exclusive of this type. In the long run WB is interested in co-developing software with Atari, although from what I could gather the products being considered are not really encyclopedic in nature, but fall more into the category of courseware. Chris met twice during recent weeks with the CEO and other top execs at WB and evidently they are very keen on the whole idea. A number of top-level WB people are coming out to Atari on June 25th to discuss a marketing test. Nothing has been signed to date.

I then spoke with Judy Singleton in Mr. Kassar's office. She had called Chris the day before and had gotten the whole WB story from him. I relayed the Van Doren call and said that if it were appropriate it would be good if Mr. Kassar could call Swanson to reassure him that nothing irrevocable had taken place with WB etc. I spoke with Judy later in the day and she said that Mr. Kassar did call Swanson, but unfortunately he was out to lunch at the time. When Swanson returned the call later, Kassar was out to lunch. [Oh those time zones; they'll get you every time!]

While the parallel discussions with WB and EB are slightly embarrassing, confusing and messy, everyone has been dealing in good faith and I see no reason why Atari shouldn't be able to work out whatever deal or deals it decides are in its interest. It's clear however that a lot of hard thinking is going to have to go on among several people from different departments at Atari before proper decisions can be arrived at. Our contribution should be a much sharper picture of the nature of the project we are proposing, including an assessment of the necessary characteristics to look for in potential partners. In light of this I must say here that recent events have raised my nagging doubts about the Britannica deal (alluded to in past memos) to a higher level. At the very least I want to play devil's advocate and put forth some serious questions about Britannica's participation.

In its broadest outline what we have been talking about relative to EB is the creation of a publishing company whose principal product will be an electronic "intelligent" encyclopedia performing both reference and educational functions. In addition to the encyclopedia this publishing company will produce a number of related products during the developmental period and beyond. Given the kind of investment we are going to make and the tremendous expertise we will have to bring to bear on the project I figure we have the opportunity to create one of the major publishing companies of the coming era.

Creating an electronic encyclopedia that will be useful for meaningful learning as well as reference will be quite different from the task of creating a traditional print encyclopedia. Once the article list is set, the main task of producing a print encyclopedia is to commission and then edit the articles, choose graphics etc. With the intelligent encyclopedia on the other hand, we are going to have to do a very complex job of figuring out how best to integrate and use various media. For each subject it will not be as simple as figuring out who should write which article, but how to employ all the media at your disposal--computer programs, still and motion pictures, text, sound--to accomplish a complex array of tasks.

Given that there is still much work to be done on the question of how to make the encyclopedia "intelligent," this company will of necessity be doing pioneering work on the creation of an electronically based pedagogy and the applications of artificial intelligence.

What does this brief description say about what sort of principal partner Atari should be looking for? Atari has some money (although perhaps not all the venture will require) and significant technical expertise. What Atari does not have at this time is any database (for the development of either short or long term products), or the array of people necessary to develop the methodology and design the content. Additionally there is the question of distribution since Atari currently has no mechanism for online delivery.

How Does EB Measure Up?

Recently I have had occasion to mention to various people the project we are contemplating - the electronic encyclopedia of the future to be developed jointly by Atari and EB (with a supporting role to be played by Lucasfilm). People go, "Ah! Wow! All the leaders in their respective fields. Sounds Great." The reality however, is that as discussions go on with EB it becomes less and less clear what role they would play in the actual creation of the new product. As I mentioned in the last memo, Van Doren contends that their first choice would be to receive a royalty in exchange for use of the Britannica name and existing databases. What's even more disturbing though is that even if there were to be a joint venture, it's not clear what Britannica could contribute beyond those two items (leaving aside here the potential value of their sales network). It is not readily apparent what strengths EB could bring to bear on the creation of an intelligent encyclopedia.

Having said that let's look at the two things that EB would definitely bring to the venture - their name and their database.

As we have discussed previously the Britannica name is valuable in two ways. Almost synonomous with the word encyclopedia, EB's name undoubtedly would have value in terms of sales. More important, however is its influence among scholars and the like who are honored to be contributors to such an august institution. Actually as far as the public goes I think it might be double-edged. EB has a great reputation for scholarliness but almost as great a reputation for being stodgy and difficult to use. And, when you get right down to it, I'm not sure we really want to name the product we are talking about after Britannica. After all the sun set on the British Empire some years ago, the Falkland Island Campaign notwithstanding. As far as the mobilizing of contributors

Britannica is not really giving us any more help than their name. Frankly I think we've been overestimating the importance of this use of the EB name, seeing it almost as a sine qua non. Look at it this way. We are contemplating an intellectual enterprise quite grand in scope. Is there any reason why we shouldn't be able to communicate a sense of this excitement throughout the intellectual community and on that basis recruit a first rate editorial board and then contributors. This is doubly true if we were to get as one of the partners an institution like Harvard or Stanford.

As for the existing EB database which includes EB, Compton's, The Syntopicon, and maybe the Merriam Webster dictionaries, an EB subsidiary. Again as we have discussed previously, I am not sure how well Compton's and EB could be adapted for use in a short term online product. Once we put them online, they lose their "furniture" value and they will have to stand on their own merits which may be uneven. Both Compton's and EB itself are quite far behind in their update program and I am afraid that the average person may not find the EB articles all that accessible. [World Book by comparison seems to be better liked by users and could be a better basis for a short term product]. Since we seem to be agreed that the content of the intelligent encyclopedia will have to be developed virtually from scratch, there is little value in the EB database to the long term product. In most cases EB doesn't even own the pictures in the encyclopedia, so they wouldn't even be bringing graphics we could use in a visual database.

To sum it up, EB could be an initial advantage, providing great press ("Atari and EB to Create Encyclopedia of Future"), introductions to contributors, and to some extent a useable database. However in the long run, EB could end up being an albatross around our necks. Clearly, over time most of the money will be made from the intelligent encyclopedia we will be developing over the next 10+ years. We could end up paying EB a very healthy royalty on that product, eventhough they didn't contribute that much to it directly. Perhaps it is better to consider finding a principal partner who can deliver more of what we need than Britannica can.

It should be made clear here that I am not necessarily arguing for teaming up with WB over EB. In general much of what I said about EB probably goes for WB as well. If any general conclusion is drawn it should probably be that the principal partner probably shouldn't be an ~~encyclopedia company~~ at all, but rather a university or a communications company, or even a publishing company with a more useful database (in terms of the intelligent encyclopedia itself) - eg. Time-Life or CBS.

Finally, I think it's been a mistake to try to avoid doing an internal (ie. for Atari) in-depth analysis of the factors involved in this encyclopedia project. Partially this error is attributable to the fact that the initiative came from outside Atari, in effect from EB, and we have tended to take far too much as given. Let's stop here and go into the issue all-sidedly. If EB is the way to go let's prove it instead of assuming it. Also I think we need to pay some attention to the question of delivery and distribution, the potential role of WAMEX, TIES, even AT&T. I think we need that in the equation sooner rather than later. It also might give us a broader picture of potential partners.

More on the "Informal Research" Proposal (See memo June 16, 1982)

I had an interesting meeting with Aimee Dorr, Professor of Education at UCLA (formerly of the Annenberg School and Harvard). Aimee was one of the early advisers to the Children's Television Workshop and has recently been doing consulting work for Lucasfilm. We met last year while I was preparing the report for Britannica. We have continued having discussions and I am impressed by her ability to deal with complex issues complexly, that is without resorting to glib or facile answers. Aimee and I discussed my idea about informal research. She said that it is a valid line of research which if done right can be very valuable. Furthermore, she offered to play a role in conducting the research and knows a couple of good graduate students we could get. She said she would be willing to do the work through the university which means we wouldn't have to pay a high per diem rate. I thought this was a good idea before, but with Aimee's participation I think it's great. Give the word and I'll draw up a brief description and proposed budget.

Adler and Bruner

I spent some time this week reading Adler's Paideia Proposal as well as all or significant parts of several Bruner titles - On Knowing, The Process of Education, and Toward a Theory of Instruction.

With Adler, I find his sense of the goals of education all right but think his prescriptions are ~~quite~~ naive. I am particularly troubled by his failure to address the problem of how you get all the excellent teachers his concept requires into the schools. He seems to want to build up the school walls; my tendency is to want to tear them down, metaphorically speaking.
Bruner's work I find very thought-provoking and I appreciate your suggesting it. He was definitely wrestling with a lot of the questions that seem to be at the forefront right now in terms of how people learn and how that learning can be motivated, facilitated etc. He was predicting a big role for television. I wonder how he sums that up now and what his thinking is on the role of computers. He's back at Harvard now after several years in England, so I will definitely plan to go talk with him when I am next in Cambridge. (It's curious but I actually got a masters degree at Harvard during the late 60's, ½ in psychology and ½ in education, and somehow never came in contact with his work. I'm still trying to figure that one out.)

June 28, 1982

To Alan Kay from Bob Stein

Following is a summary of several phone conversations on the Britannica/World Book issue. It's a sticky situation but in the long run it may turn out to be a good thing if it forces us to sharpen our understanding of what we want to do and who we want to do it with.

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And finally, another call from Van Doren reporting on the Wednesday meetings. As he put it, EB "having seen that Atari is willing to deal with things on a non-exclusive basis" had decided to enter into an agreement with a third party (unamed) to create courseware bearing the Britannica name. The courseware which will be produced by the third party and distributed by EB will be made available for all popular microcomputers. While Van Doren felt that this decision was partially in response to the Atari-World Book discussions, overall he sees it as a good thing. He feels that we are no longer under the gun to come up with an either/or solution to the World Book/EB question, at least as far as deals covering the distribution of Atari products. Frankly, I don't know whether he is right or not in saying that EB (ie. Swanson and Gwinn) wouldn't mind Atari making distribution deals with both EB and WB. I think we would have to talk to Swanson directly about that. Van Doren did add however that Swanson and Gwinn are still very excited and hopeful about making some kind of deal with Atari for development of the electronic encyclopedia. In fact, Van Doren said that if Atari were very upset about this pending arrangement with the third party software developer, if it were to lead us to be less interested in working with EB on the encyclopedia then we should call EB and register such concern - before Friday if possible since that is when the next meeting between EB and the courseware producers takes place. (It is likely that Van Doren was supposed to communicate this latest development to Atari through me, since he specifically said that it would be all right for it to get back to EB that he told us about it.)

While the parallel discussions with WB and EB are slightly embarrassing, messy and confusing, I don't think anything has happened yet which would prevent Atari from working out whatever deal or deals it decides are in its interests. However, the situation certainly coincides with nagging doubts on my part that we are not sufficiently clear on what our interests actually are in all this. Specifically we need a much sharper understanding of all the factors involved in what we want to do before we can decide exactly who we want to do it with and on what basis. At this point I think it's a mistake that we've tried to avoid doing an internal (ie. from Atari's point of view) analysis of the encyclopedia project. Because the initiative came from outside Atari (in effect from EB through me), we have tended to assume EB's participation as the principal partner and as a result we have failed to consider the project in a thoroughly all-sided manner. Had the idea for the project originated at Atari, presumably a report would have been prepared which described the nature of the product, how it would be produced, marketed and distributed,

the nature and structure of the business through which all this would happen, the strengths and weaknesses of potential partners and combinations of partners, and the precise role of the research group etc.

We need to consider in some detail, for example, how producing a multi-media electronic encyclopedia aimed at least as much if not more at learning rather than fact reference will differ from producing a traditional print encyclopedia. What are all the tasks involved; who can best do what? In this context we could start to ask some important questions about EB - the value of the EB name and of the existing database in terms of both short and long term products, and the potential contribution of EB's editorial department.

Also, I think we need to pay significant attention to the question of delivery and distribution and the potential role of WAMEX, TIES, even AT&T. We need that in the equation sooner rather than later. It might give us a broader picture of potential partners.

Since an earlier version of this memo (shown to Chris Jeffers) took a devil's advocate position, raising several questions about EB's participation, I want to emphasize that I am not attempting to lay a basis for an argument for WB over EB. In fact, the reason I decided to rewrite the memo was that given the current EB/WB brouhaha the original tended to make the terms of the discussion WB or EB when what I really wanted to do was to question the role to be played by any encyclopedia company. Independent of all the EB/WB stuff I had started to wonder whether, given the vast magnitude of the tasks involved, EB would actually end up being our major partner in this enterprise or would their role be secondary with the major partner being a communications company, another publishing company whose existing database might be more valuable in terms of the requirements of the long term objective or perhaps an educational institution.

At this point I would like to see us form a small group to study these questions and prepare a report. In addition to me and Steve Weyer (Dave McDonald?) I think it would be good to have someone who understands the various implications and ramifications from a business point of view.

More on the "Informal Research" Proposal (see memo June 16, 1982)

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Workshop and has recently been doing consulting work for Lucasfilm. We met last year while I was preparing the Britannica report. Aimee and I have continued having discussions and I am impressed by her ability to deal with complex issues complexly, that is without resorting to glib or facile answers. At our last meeting we discussed my idea about informal research and Aimee said that it is a valid line of research which if done properly can be of great value. Furthermore, she offered to play a role in conducting the research and knows a couple of good graduate students we could get. She said she would be willing to do the work through the university which means we wouldn't have to pay a high per diem rate. I thought this was a good idea before, but with Aimee's participation I think it's great. Give the word and I'll draw up a brief description and proposed budget.

Adler and Bruner

I spent some time last week reading Adler's Paideia Proposal as well as all or significant parts of several Bruner titles - On Knowing, The Process of Education, and Towards a Theory of Instruction. With Adler, while I find his sense of the goals of education alright, I find his prescriptions naive. Frankly I think he is too nostalgic for the good old days. His solutions tend to require an even greater separation of school from the rest of society (where is going to get all those great teachers anyway) while I tend to think we need to go in the opposite direction, integrating school and education as much as possible into the rest of society. Bruner's work I find very thought provoking and I appreciate your suggesting it. He was definitely wrestling with a lot of the questions that seem to be at the forefront right now in terms of how people learn and how that learning can be motivated and facilitated. He was predicting a big role for television. I wonder how he sums that up now and what his thinking is on the role of computers. He's back at Harvard now after several years in England, so I will definitely plan to go talk with him next time I am in Cambridge. (It's curious but I actually got a Masters degree at Harvard during the late 60's, ½ in psychology and ½ in education, and somehow never came in contact with his work. I'm still trying to figure that one out.)

The rest of this week I will be at the Videotex 82 conference in New York, to be followed up with meetings with Terry McCarty and others in the WAMEX and TIES operations.

July 13, 1982

To Alan Kay from Bob Stein

Following are some initial comments on TIES and related subjects - QUBE and videotex.

There are several sources of these impressions, including:

- attendance at the recent Videotex '82 conference in New York (this is the major international meeting of the year dealing with videotex)

- a visit to the QUBE operation in Columbus, including discussions with people responsible for programming, marketing and technical matters

- meetings with:
  Terry McGarty (the main man at WAMEX responsible for TIES reporting directly to G. Hauser) and two of his people, Mike Steckman, an engineer, and George Ravitch, the manager of market research
  Tom Rush, the VP of WAMEX responsible for developing business in the commercial sector
  Norm Smothers and Conrad Jutson of Atari; plus the opportunity to read an extensive marketing report prepared by Smothers on the TIES venture

As far as TIES goes, your suspicions seem to be well-founded. At present the venture would appear to be ill-conceived and heading in a questionable direction. Although my investigation to date is hardly exhaustive, the main reason why I need to use verbs like "seem" and "appear" is that it's difficult to pin down from one minute to the next exactly what TIES is. The nature of the beast seems to be ever-changing and McGarty & Co. are not that keen on providing hard facts and figures to back up their claims. When pressed they refer to a "white paper" to be released internally in August which is supposed to answer "all the questions."

My reservations about TIES are in two general areas:

- their analysis of the videotex market and its likely evolution. (Videotex as used here refers to the full range of one-way (teletext) and two-way (online) services including information retrieval, tele-shopping, tele-banking, education, games and other entertainment applications)

- technical considerations, especially the plan to deliver video on demand and the seemingly limited capacity of the system to deal with large numbers of users.

Wither Videotex?

TIES is predicated on the assumption that the consumer will not go for videotex at its current technological level. The consumer, they assume, will not take to the text and graphics format of current videotex, even in its most advanced PLP form, but will demand (expect) full motion video. This assumption is based in large part on the assessment that tele-shopping will be the key videotex service.

Going on instincts rather than market reports (you can find bunches of reports that argue the whole videotex issue any way you want) I think they are wrong. From what I've seen of the numerous pilot and experimental services, videotex at current technological levels is likely to be a winner as soon as two things happen:

1. availability of low-cost terminals, preferably combining the function of videotex terminal and home computer
2. creation of a delivery system which is national in scope (necessary to permit economies of scale)

[I think you can see here the vast potential of Atari/AT&T cooperation in this field]

While it's unquestionably true that videotex will eventually include video on demand, it is likely to come as a result of an evolutionary path beginning with the relatively crude line drawings available today, going through still photographs and ending up with full-motion video on demand. My guess however is that video on demand will not become a universal feature until it is practical to use digital video.

Several of the major publishing/communications companies have launched impressive videotex trials. These include Time Inc., Times-Mirror and the two AT&T joint ventures with Knight Ridder and CBS. I would say they are well on their way to developing a marketable range of services. According to McGarty, TIES won't have a full scale pilot for two years, which will put them way behind. I realize the intention is to leap frog the current technology and end up ahead, but in fact they are likely to expend their greatest effort trying to make video on demand work rather than tackling fundamentally more important questions such as the content of the services and the nature of the interface. In this light it is significant that when I asked McGarty about the interface they were designing for TIES he indicated they hadn't done much thinking about it at all and didn't really see it as an important question. The seriousness of this problem was emphasized when they showed me a videotape simulation of TIES to be used in market research. On the one hand you have a supposedly

advanced technological systems providing living color with the most outdated 15 year-old menu driven indexing etc. There does not seem to have been any where near enough thought given to what makes videotex a unique medium and off of that how to integrate the various components to make a system the consumer will appreciate.

Technical Considerations

The plans to deliver video on demand using videodisc players at the head end seems cumbersome at best and hopelessly unworkable at worst. Aside from the fact that there is something inherently inelegant about the idea of stringing 100's perhaps 1000's of videodisc players together, I think they are vastly underestimating the capacity necessary to deal with the system they are creating. (Again, we will have to wait for the "white paper" to see all the facts and figures)

Basically, for video on demand to work the way they are planning, the only way to ensure sufficient capacity (ie. so that there is no significant waiting time) you either have to make the service either prohibitively expensive or fundamentally uninteresting. When I asked what happens if it turns out that people really loved using the system and the usage consequently is much greater than expected, the answer was that they will charge for the privelege of browsing. In other words, if it turns out that people are spending too much time browsing in the Penney video catalog, TIES will charge customers for the privilege. (The analogy to the phone company's charge for directory assistance was made) This sounds lame to me. I suppose it's possible to educate the consumer to the idea of paying for catalog browsing, but it seems cockeyed to go in with that sort of solution to what is essentially a technical problem.

One other technical point. To deliver video on demand with present technology requires that the delivery be via cable tv. Over the next 5 to 10 years this would severely limit your customers to those with two-way cable systems meeting certain technical specifications. (QUBE as presently configured could not be used for TIES as presently conceived.) It seems premature to set up a service which can only be delivered via cable TV - at least from Atari's point of view. Admittedly the service could be made available via telephone, without video on demand, but that would negate the heart of the system and present another set of problems.

[While we're on the subject, I was really quite surprised when I visited QUBE to learn how primitive the existing system is in terms of two-way capability and even more surprised to find that there are no serious tests or

experiments going on to figure out how to provide greater two-way capability. QUBE is regarded as pathbreaking but in the absence of significant ongoing developmental work to build on what exists, QUBE will rapidly lose its lead position. Put another way, while QUBE is flashy and did a great job of winning franchises for WAMEX, there may not be much technical depth to the operation and without substantial work to expand the two-way capability the situation may soon be akin to the emperor's clothes.]

Clearly I think Atari should consider the TIES situation very carefully. However I think this has to be taken up in terms of the bigger question of videotex in general and further that videotex must be considered as broadly as possible. ***** One important point that is becoming clearer to me is that lurking behind the rather trivial questions that dominate a lot of the discussions about videotex are some very fundamental BIG questions such as Which companies are going to distribute Which services to Whom in What Manner. Videotex is not some peripheral medium; it is right at the heart of electronic publishing, and having the right answers to these questions will help determine who will make it big in electronic publishing and who won't.

When considering TIES and Videotex Atari should take up at least the following:

- the type of terminal/decoders required and the short term possibility of configuring the Atari 400/800 as a PLP/Telidon compatible terminal
- the method of delivery of videotex services; particularly a sharp sense of the potential role of the cable cos. and AT&T
- the kind of system software and interface needed to make using a videotex service easy, efficient and where possible, fun.
- publishing opportunities, including games, the encyclopedia, education, other entertainment forms etc.

July 20, 1982 To Alan Kay from Bob Stein

Good news! The time and effort spent on a closer look at EB and World Book was well worth it. We now have a much clearer picture of the differences between the two companies and the potential for a much more exciting "deal" than I think we were expecting.

Looking at three main categories - the sales organization and strategy, the existing database and the general orientation of each company - a compelling case can be made for working with EB. Chris Bowman who went with me to Chicago is of the same opinion.

This memo is divided into three sections. The first analyzes and contrasts key aspects of the EB and WB operations. The second describes a proposal EB made to us in Chicago and suggests some points we might include in our proposal to them. The last section tries to put the whole encyclopedia project into a broader perspective.

EB and WB

Domestic Sales Organization - EB employs 1500 full-time, professional salesmen. They are a highly trained and managed sales force, working from solid leads supplied by a major marketing effort. EB's domestic sales (not including schools and libraries) are 100,000 sets per year. WB by contrast, relies on 30-60,000 part-time salesmen, mainly teachers and housewives. WB's yearly domestic sales (they wouldn't give us exact figures) are probably about 200,000 sets. Because the EB product is twice as expensive, the actual dollar amount of EB sales is greater.

On the surface the WB numbers look great. However, there is reason to believe that the structure of EB's sales force will be more compatible with the requirements of computer hw/sw sales. To be considered a WB salesman you have to sell only one set during the preceding six month period. This is why their active list can have 30,000 names one month and 40,000 the next, with only 25,000 being repeated. More important, these salesmen are neither highly trained or managed. I have considerable doubt as to whether this somewhat amorphous sales force can be shifted very easily into something as relatively complex as computer sales. Indeed, evidently WB has raised this question themselves, suggesting that they may have to recruit and train a separate sales force. EB on the other hand, does extensive training of its sales force

and believes they can integrate additional training into their structure as needed.

Marketing, Promotion and Advertising - In order to generate leads for its salesmen EB does a prodigious amount of advertising and promotion. In fact EB is the world leader in at least two areas. EB does more shopping mall exhibits than anyone. They are currently designing 6 new traveling exhibits in conjunction with Disney. They are also number one in trade shows and expositions, fielding approximately 2500 booths per year. In addition EB distributes hundreds of millions of mailing stuffers and newspaper and magazine inserts. Pete Rose is their spokesman on TV ads. Also, EB runs the information booth at over 22 theme parks around the country, including Six Flags, Kings Island, Universal Studios Tour, Marineland and Opryland. Marriott's Great America Parks and Sea World will be added soon. At these booths, they give out park information and display Britannica products, soliciting leads whenever possible.

WB does very little advertising or promotion directed at the consumer market. Virtually all promotion dollars are spent on various campaigns aimed at the sales force itself, getting them motivated etc.

International Connection - EB enjoys significant international sales. Wholly owned subsidiaries in Japan, Australia, Canada, Western Europe, Britain, Philippines and Korea sell more than 50,000 sets of EB. Plus, EB is involved in numerous joint ventures which publish encyclopedias in many of the major languages of the world - the French Encyclopedia Universalis (20,000 sets); the Japanese Britannica International (80,000); the Barsa Spanish and Portuguese encyclopedias (60,000); and the Italian Il Modulo (12,000). Under an exclusive agreement with the Chinese government a major Chinese encyclopedia based on EB is currently under development. Although it should not be assumed that EB has complete freedom to sell whatever it wants in every country, the EB-Atari connection could prove to be very valuable in many places, both in terms of international sales of the intelligent encyclopedia and related products and also for the sale of Atari computer products.

WB by contrast, does not have much of an international presence outside of Canada. Operations in Japan were shut down last year.

The Existing Database

Our doubts concerning the EB database centered on two factors. First, much of the Macropedia is quite out of date (Van Doren confirmed that over 90% was written between 1969 and 1972).

Second, the combination of difficult language and sheer mass of information makes EB somewhat inacessible to the average user. Compton's Encyclopedia, which is equivalant to WB in readability and scope is owned by EB and would be available to us, but it is badly outdated, some of the articles going back more than 20 or 30 years. These are definite weaknesses, which in fact would show up more strongly if put online when the content is cut loose from its imposing bindings and has to stand on its own merits. However, in the course of further investigation and discussion it appears that there are several mitigating factors and an alternative way of looking at the situation.

First, EB is currently engaged in an active revision program for both Compton's and EB. Compton's will be overhauled completely by 1987 or 1988; the Macropedia will be thoroughly rewritten over the next 5 years. (The Micropedia is actually quite current.) What this means is that not only will EB and Compton's be spanking new within the next five years, but that presumably we could influence the direction of the revisions where appropriate. Van Doren also suggested that the revision of Compton's could be speeded up if the yearly budget for that revision were increased. Current plans are to spend $1,000,000 per year for the next five years. Further, upon examination it looks as if the EB yearbooks (general Yearbook, Science and the Future, and the Medical and Health Annual) which are quite comprehensive could, in an online system, be integrated into the whole and make up for deficiencies in the Macropedia while its revision is being completed.

WB is highly regarded as authoritative and understandable. It is currently quite up to date. Its main failing for our purposes is the relatively unsophisticated range of its content. However, added to this, it looks like WB's revision schedule is not sufficient to keep the database up to date. The current schedule calls for the rewriting of only 300 pages per year out of a total of 13,000. It seems that Scott and Fetzer, the vacuum cleaner company which bought World Book is content to work the existing database for all its worth and may not be willing to invest the kind of time and money to keep the product first rate. We believe that WB has cut down its editorial staff recently.

Five years from now when our short term online encyclopedia will be hitting its stride, EB and Compton's will be sparklingly fresh, while WB may very well start to look rather stale.

Putting WB online would undoubtedly be a much easier and straightforward task than dealing with EB and Compton's. Not only is EB a much larger and more complex database, if we decided to use Compton's as well, in order to have

a simpler or "children's" mode, we have the added problem of integrating the two encyclopedias into one system. While I have tended to see this as mainly a problem which would deflect energy from the tasks associated with the design and creation of the intelligent encyclopedia, Steve has convinced me that in struggling to adapt the EB database we will undoubtedly learn a lot of things that will be applicable to the intelligent encyclopedia. In other words it will be a greater challenge to work with EB (and Compton's) but the added effort will be worth it because of its contribution to the final goal.

Along with EB and Compton's, a deal with EB would give us access to the Merriam Webster dictionary which currently outsells all other dictionaries combined.

General Orientation

Contrasting EB and WB reminds me of the tortoise and the hare, with EB as the lumbering old tortoise and WB as the flashy hare. Having had the opportunity to see the WB and EB operations side by side I am beginning to see a certain elegance in EB's inexorable plodding. One point they emphasized is that they consider themselves first and last an encyclopedia company. Although I am not sure they are hip to what an encyclopedia company is likely to become in the coming period, this orientation is basically sound. They have a keen sense of what their strengths are (less of their vulnerabilities) and are determined to build on them. A key example of this is their decision to embark on a major revision program for both EB and Compton's. Whatever happens with online encyclopedias over the next ten years, there will still be a substantial market for print versions during that period, and without an up-to-date encyclopedia EB realizes it will be nowhere. Interestingly, it is precisely their well-developed understanding of their strengths that leads them to be so excited now about the deal with Atari. They recognize that Atari's image complements their own quite well and that Atari brings the expertise and resources necessary to help them go into the future standing on their feet. Actually there has been a fundamental change in attitude at EB in the last few weeks. Whereas I used to feel we were dragging them kicking and screaming into the electronic age, they seem to have acquired a certain excitement about. the potential of an Atari-EB deal. I definitely get the sense with EB that once the deal is made they are going to give body and soul to make it work.

Although my understanding of WB is not as well developed, I don't get the same sense from them at all. Although

quicker off the dime than EB, they seem to be flailing around, reaching out in several different directions, hoping that something works. At present they are involved in at least 6 different experiments and pilots that I know about - 2 videodisc projects, 3 videotex experiments (WB will be available on Compuserve in August) and a number of microcomputer projects. As far as I know none of these projects is very impressive. Even more disturbing, however, is the seeming lack of a comprehensive plan. They are doing a lot of cheap, fast, easy things, hoping that one will pay off. In fact, except for the high cost of the marketing study they've proposed, the deal with Atari seems to be just another one of these schemes. They hope it works but if it doesn't, "Oh well." I'm sure I'm overstating the case here, but the point is still valid.

Proposals - EB's to us, ours to them

In the course of the Chicago meeting EB made a very exciting proposal. The chief architect of the plan is the new executive vp for sales, Bob Baseman. Baseman is a live wire, a breath of fresh air in all too musty halls. Actually, that's too genteel; he's more like a tornado. Go to central casting and get Swanson's opposite (in every way) - now you've got Baseman. Anyway, once he got warmed up and began to grasp the potential of an Atari-EB relationship for EB he proposed the following sales and marketing arrangement.

For starters EB would like to offer an Atari computer as a premium for the purchase of a set of EB. For example if you buy a set of EB, then for an additional ? dollars you could get an Atari 400 or for an additional ?? dollars you could get an Atari 800. EB would buy the computers from Atari and offer them at a price below their cost to the customer.

As it became available, EB salesmen would sell software for the Atari computer bearing the Britannica name. They would not mind selling non-Britannica software if it were possible to ensure a sufficient profit margin.

EB maintains an active list of 1.2 million EB customers (EB sells over 1 million yearbooks each year) and would attempt to generate sales of Atari products to this group. Also, EB would develop a special sales force to handle school sales of Atari products. Currently EB is not permitted to sell its own products directly to schools and libraries. This is done through EBEC, an entirely separate company which EB does not get along with very well, but to which they are bound by sales agreements. However there is no legal or

contractual reason why EB can't sell computers to the schools. For EB these school sales are seen as both a very profitable venture and a sure-fire way to generate leads for encyclopedia sales - getting to the parents through the schools.

While there was no indication that EB wants to turn its salemen loose to sell only computers, they did say specifically that if a customer didn't want to buy an encyclopedia, but did want to buy a computer, they would definitely let the salesman sell the computer alone at a standard retail price. Eventually I would expect computer sales to become a significant portion of EB's business. However, in the absence of any experience on their part, it doesn't make sense to try to convince them of this a priori. If they want to start out by selling computers at less than their cost I think it's great. If it were any other company but EB I might be concerned that offering the 400 as a premium might cheapen our image. With EB this shouldn't be a problem though.

Baseman estimates that in the first full year of this program he will move at least 100,000 computers.

Here's the nifty part. EB would put Atari's name into ALL promotional materials and ads. In addition EB would make Atari a part of all traveling shows and amusement park booths, displaying not only the name but Atari products wherever possible. In other words wherever someone sees the name Britannica in the future they will also see Atari. I don't think we could purchase that sort of quality exposure if we tried. EB would do this as no cost to Atari.

EB does not require a market test. They just want to get going.

While Swanson wasn't at the meeting at which Baseman developed this proposal, Van Doren is confident Swanson will be persuaded. Wanting a check on Van Doren's enthusiasm I called Baseman and asked him if he could sell the idea to Swanson. Baseman said that Swanson had just called him and asked what he should tell Atari. In other words Swanson will go along. I think even he's getting enthusiastic.

Some elements to be included in Atari's proposal to EB:

1. It must be clear from the beginning that whatever deal is made with EB does not prevent us from striking other deals (except with other encyclopedia companies) which might subsume the EB arrangement. (See next section, "The Bigger Picture.") A mechanism would be developed permitting EB to buy into whatever larger venture is created.

2. EB would make available to us on an exclusive basis all EB owned products for adaptation to electronic form. Payment to EB would be in the form of royalties on actual sales.

3. Atari would be consulted and its opinion sought on various matters pertaining to the revision of existing EB products.

4. A mechanism must be developed through which EB can participate in the development of both the short term online encyclopedia and the intelligent encyclopedia.

5. EB would have an exclusive relationship with Atari; ie. Atari would not enter into agreements with any other encyclopedia company and vice versa, EB would not make agreements with other computer hw or sw manufacturers.

6. EB would promote and sell Atari products wherever possible in the international market.

7. EB would put the Atari name onto all promotional materials and involve Atari in all traveling road shows, exhibits, etc.

8. Atari would use its knowledge and resources to help EB develop a line of software that would be exclusive to EB.

9.

10.

The Bigger Picture

While we can now identify EB as the encyclopedia company to work with, nothing has changed my opinion that EB will not end up the major partner in this venture. There are three principal components to the encyclopedia project (besides large sums of $) - technology (including hw and system software); the content; and a mechanism for delivery and distribution. Clearly Atari is to be relied on for the technology. The research group will be called on for key technological solutions. With the other two components, content and distribution, Atari will need lots of help.

The content seems like the hardest and biggest job. Far more complex than just assembling and editing articles, creating the intelligent encyclopedia will require a massive pioneering effort in the use of electronic technologies for learning and information retrieval. Clearly EB has neither the resources nor expertise to take on this task by itself, if at all. Put another way, what we are undertaking is akin in some ways to the gigantic effort around the Apollo Moon Shot; obviously not so much in size as in complexity and scope. We will be involving large numbers of people from numerous fields. Following this analogy for a bit, like the space program which spawned countless useful technologies that have since been turned into products and found their way to the industrial and consumer markets, the effort to develop the intelligent encyclopedia will give birth to large numbers of associated products - videodiscs, computer simulations etc. These products can - and given the tremendous developmental costs involved, probably need to - be published and marketed on their own. What this suggests to me is that we should be looking to develop the intelligent encyclopedia in the context of a much larger publishing enterprise which could market a number of the products that are created along the way. In fact, given the tremendous expertise and resources that we are going to bring to bear on these problems, and the state of the art products that we will produce as a result, we are in a position to create one of the largest and most influential publishing companies of the coming era.

Who else we need -

Major University - In order to develop the content we need the resources of a major university. I see the formation of an Atari Institute at Harvard, Stanford etc. which would be responsible for guiding the design, development and then

assembly of the content into its final form. The advantages of locating this work at a major university are that the faculty can function as advisers and consultants, and the undergraduate and graduate students can be a source of relatively inexpensive, capable and enthusiastic labor. I foresee a whole cadre of graduate students devoting their thesis research to solving problems relating directly to the intelligent encyclopedia project.

A Communications Company - Creating the intelligent encyclopedia is one thing. Getting it to the consumer is another. In order to reach the broad numbers we want, we need to work closely with a company which brings this sort of capability to the project. AT&T is an obvious choice, but there are undoubtedly others, perhaps less obvious...

A Publishing Company - We need to consider bringing in a large publishing company which could provide a useful database and a significant distribution network (for products not delivered online). Time-Life with its 5,000,000 photos and numerous films and CBS with its huge TV news archive are both reasonable examples.

August 3, 1982 To Alan Kay from Bob Stein

There seems to have been some crossed signals during your conversation with Swanson last week. According to Van Doren, Swanson specifically suggested that they come out to Sunnyvale, to which you gave no specific response. Further, Swanson was confused by your response to his remark about expecting a proposal from Atari - ie. your suggestion that instead of Atari presenting EB with a formal proposal, that we work together to hammer out the essence of a deal. It's not that Swanson is opposed to this procedure; it's just that he had been led to expect that a proposal was forthcoming. Evidently Swanson's "coolness" on the phone was a function of his disappointment that he wasn't getting something more concrete in the way of an invitation and an indication of our enthusiasm. Again, according to Van Doren, Swanson "couldn't be more excited" about the prospect of working with Atari.

I suggest the following:

- a phone call to Swanson extending an invitation to him and Van Doren (and perhaps Norton and Sloan) to come out August 23-25. Van Doren suggested they could arrive the afternoon of the 23rd. We could have dinner with them that evening; talk most of the 24th and finish up on the morning of the 25th if necessary.
- a letter from Ray confirming the invitation and outlining what we hope to accomplish while they are here - coming to basic agreement on a deal etc.

While I don't think it's mandatory that we present EB with a polished proposal, I do think we need to do a fair amount of homework in preparation. You had mentioned that Ray was involving Linda Gordon in some of the thinking about the structure of the deal we might make with EB. Perhaps it would be good for Linda and me to get together. Also, given that EB's sale of Atari products is likely to be an important element during the early stages of our working together, perhaps someone from HCD should be involved as well.

September 2, 1982

To Alan Kay, Chris Jeffers

From Bob Stein

Subject: Bank Street Project in Science and Math Education

I met this week with Sam Gibbon. Formerly the producer of Sesame Street and executive producer of the Electric Company, Sam is currently the director of the Bank Street Project in Science and Math Education (as well as a member of the board of the Atari Institute). As winners of a highly competed-for contract with the Office of Education, Sam's group is exploring the use of new technologies in science and math education. With their 2.65 million dollar grant they are producing 26 15-minute episodes of an adventure story about 2 scientists and a group of teenagers on a whale research expedition. (See attached brochure.) The story will stand on its own as a drama, however a wide range of additional materials including microcomputer software and videodiscs will be created to be used in parallel with the tv programs. Some of the software, especially that aimed at younger children is logo based. Because of the story line which involves both whales and a sea voyage, there are numerous interesting paths of inquiry that can be explored - biological adaptation and survival, the food chain and the interdependence of species; navigation and the underlying principles of physics, mathematics and astronomy.

Sam would like to find additional funding for the project. He is looking for approximately $500-750,000. A small part of this would go toward improving the production and dramatic value of the TV programs, but most is aimed at expanding the scope of the software and videodisc materials. For example, when they are done Sam expects to have a tremendously valuable collection of whale footage and is very interested in producing an "encyclopedic" videodisc on whales. He wants to try to construct a browsable domain with a number of entry points and variable pathways.

This project presents a number of interesting possibilities in terms of the Atari/EB venture:

1. If one company were to provide all the $ needed, not only would its name be associated prominently with the TV series (to be aired on PBS probably, although there is still a small chance of ABC), but could be the publisher and distributor of the software and videodiscs.

2. Since they already have $2.65 million of govt. money Atari/EB can buy into the project very cheaply.

3. They have a creative group in place and up to speed

4. I think Sam would be amenable and receptive to Atari input and collaboration, such that the projects research function and product development could coincide as much as possible with our own plans.

I know Van Doren would be very interested in pursuing this possiblity. He and I went to visit Bank Street in February and spent an hour or so playing with a navigation simulation they were developing. It needed work but was a lot of fun and showed considerable promise. Van Doren was quite impressed and has referred to it often as an example of software heading in the right direction.

I suggest we look at the whole project carefully and assess its overall value to us. (The pilot of the TV show will be ready for viewing later this month.) Perhaps Brenda L. could take this on. Cynthia S. might want to look at the quality and nature of the LOGO work they are doing. If we like what we see we probably want to bring in the advertising folks etc. since our support of the project would amount to sponsorship of the TV program. Presumably part of the Atari $ could come out of the advertising budget.

September 2, 1982

To Alan Kay, Chris Jeffers

From Bob Stein

Subject: Bell Labs

Earlier this week I spent the better part of the day at the Computer Technology Research Laboratory of Bell Labs. While my original reason for going was to see a demo of a videodisc project, it turned out that this particular division of Bell Labs is extremely interested in the possibility of joint efforts with Atari (and Lucasfilm) so that when I got there they put on an impromptu show, brought in the director etc. The director, Hal Alles succeeded Bob Lucky who has been promoted. I also met with among others, G.D. Bergland, the head of the Digital Systems Research Group and Ron Gordon who runs a video technology group under Bergland. While I'm not sure of the breadth of the charter which this laboratory operates under (there are approximately 60-75 scientists at the PHD level) one of the strong areas of interest is entertainment. Here is some of what I saw:

1. Ron Gordon's group has developed a computer driven videodisc based information kiosk for Disney's EPCOT. From what I saw this is a well conceived and engineered system which permits the user to browse the attractions and services at EPCOT. I particularly liked the infrared touch screen system which responded quickly and accurately to even the most languid stabs at the screen. Also, they put a lot of effort into getting the human factors right, including extensive on site testing at Disney World in Orlando. Gordon is presently setting up an advanced video lab. According to him, he believes they are working on many of the same questions as Atari and Lucasfilm and they are very interested in seeing if there is a basis for collaboration. For example, they are using an Ikonas frame buffer and have written software to drive it. They would like to see if Atari and Lucasfilm would like to adopt their software to facilitate communication etc. (Eric H. interviewed with Ron Gordon and may have a more developed sense of what this particular lab is up to.

2. They showed me two different areas of game related research. The first was work in 2½ and 3D animation, including its use in multi-player networked games. From my limited perspective I thought what they showed me here was impressive - in terms of the real time user control over a 3D object. They also demonstrated a

set-up involving 2 Atari 400's each of which had a special modem ($100 retail - their offhand estimate) which permitted 2 people to play a 2 man version of Star Raiders using a 300 baud transmission rate. The action of one player is represented in real time on his opponents screen allowing for actual dog-fights etc.

As they explained it, as AT&T heads toward the break up, they realize the lab will have to go out and hustle work. They are looking to do research for other companies on a contract basis and possibly to enter into joint venture arrangements. They have tried to contact Atari through its legal department but got no response. In terms of immediate game applications, they are now trying to contact Activision (and I assume Mattel etc.) Basically these guys are very inexperienced entrepreneurs trying to find their way. They would most like to work with us and Lucas (Alan's coming to Atari was of great significance to them as was the announcement of the Atari/Lucasfilm connection), but if they get no positive response they will definitely go elsewhere. Given the quality of the people in this group and even the limited amount we know about the range of their interests, it might be a serious loss if they were to go with a competitor.

Alles suggested that they would love to host a delegation from Atari research (hopefully including A. Kay). I strongly recommend we go talk to them; the potential of some sort of alliance seems great. We'd be crazy to let this one hang out there too long. Just say when, I'll make the arrangements.

file

Inter Office Memo

CORPORATE DIVISION
Corporate Research

To: R. E. Kassar, Ted Voss

From: Alan Kay

Subject: BANK STREET PROJECT Date: 9/24/82

Sam Gibbon is an old friend of mine. He's terrific I would certainly like to get involved in this project. It would also be a great plus for Atari and EB.

Will let you know further.

ACK/sh

Inter Office Memo

SEP 15 1982

ATARI®

Corporate Headquarters

To: Ted Voss

From: R.E. Kassar

Subject: Bank Street Project - Bob Stein Memo Attached Date: 9/13/82

I'm enclosing a copy of a memo from Bob Stein on the Bank Street Project in Science and Math Education which is self-explanatory.

Please look into the situation and advise me of your thoughts.

Thank you.

REK/sew

cc: Chris Jeffers
Alan Kay
Bob Stein

Sam Gibbon is an old friend of mine. ~~and is a [illegible]~~
He's terrific. I would certainly like to get involved in the project. It would also be a great plus for Atari and EB.

will let you know further

Mary Ikman
cc: Ted Cohen

file

September 2, 1982

To Alan Kay, Chris Jeffers

From Bob Stein

Subject: Bank Street Project in Science and Math Education

I met this week with Sam Gibbon. Formerly the producer of Sesame Street and executive producer of the Electric Company, Sam is currently the director of the Bank Street Project in Science and Math Education (as well as a member of the board of the Atari Institute). As winners of a highly competed-for contract with the Office of Education, Sam's group is exploring the use of new technologies in science and math education. With their 2.65 million dollar grant they are producing 26 15-minute episodes of an adventure story about 2 scientists and a group of teenagers on a whale research expedition. (See attached brochure.) The story will stand on its own as a drama, however a wide range of additional materials including microcomputer software and videodiscs will be created to be used in parallel with the tv programs. Some of the software, especially that aimed at younger children is logo based. Because of the story line which involves both whales and a sea voyage, there are numerous interesting paths of inquiry that can be explored - biological adaptation and survival, the food chain and the interdependence of species; navigation and the underlying principles of physics, mathematics and astronomy.

Sam would like to find additional funding for the project. He is looking for approximately $500-750,000. A small part of this would go toward improving the production and dramatic value of the TV programs, but most is aimed at expanding the scope of the software and videodisc materials. For example, when they are done Sam expects to have a tremendously valuable collection of whale footage and is very interested in producing an "encyclopedic" videodisc on whales. He wants to try to construct a browsable domain with a number of entry points and variable pathways.

This project presents a number of interesting possibilities in terms of the Atari/EB venture:

1. If one company were to provide all the $ needed, not only would its name be associated prominently with the TV series (to be aired on PBS probably, although there is still a small chance of ABC), but could be the publisher and distributor of the software and videodiscs.

2. Since they already have $2.65 million of govt. money Atari/EB can buy into the project very cheaply.

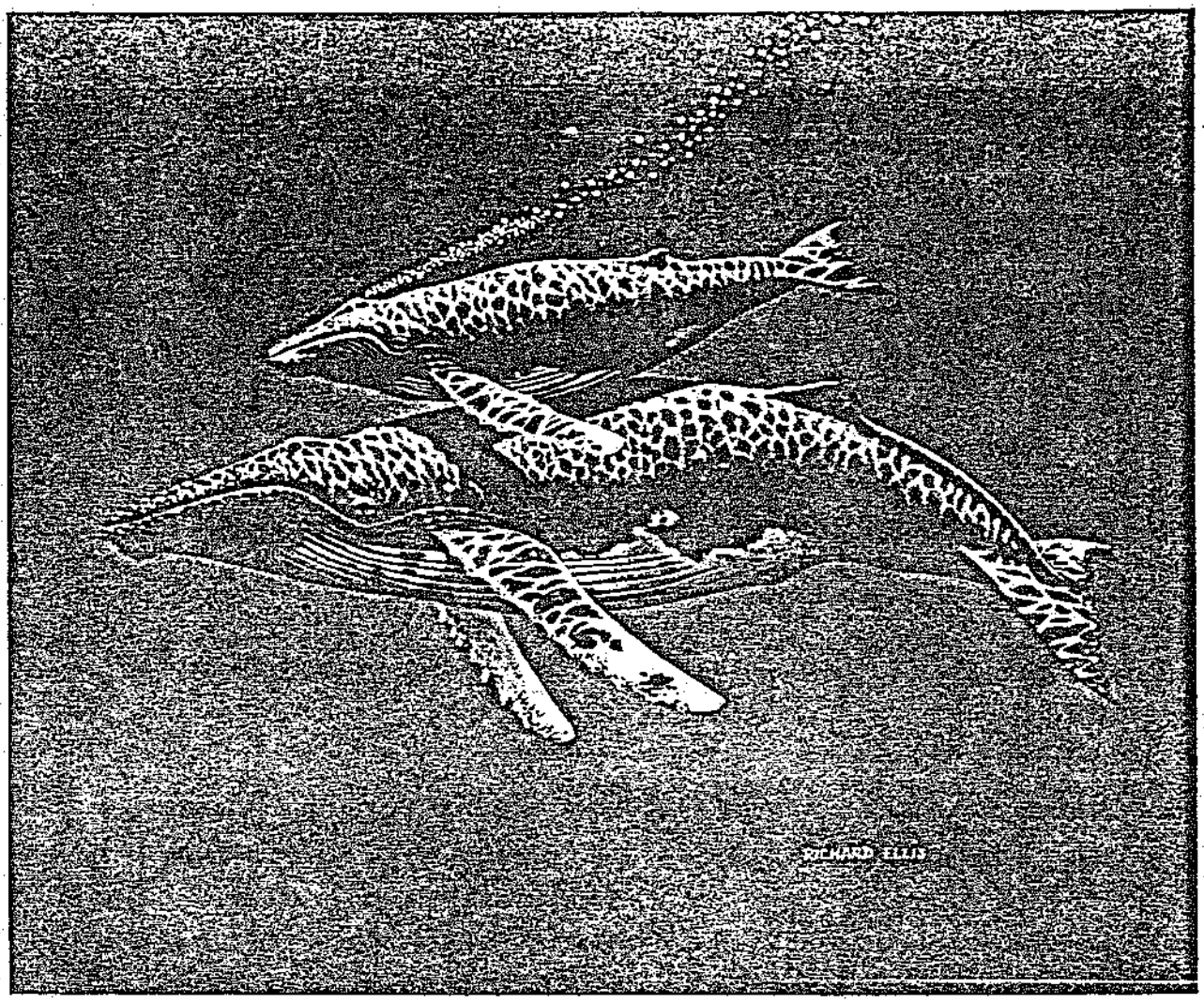
3. They have a creative group in place and up to speed

4. I think Sam would be amenable and receptive to Atari input and collaboration, such that the projects research function and product development could coincide as much as possible with our own plans.

I know Van Doren would be very interested in pursuing this possiblity. He and I went to visit Bank Street in February and spent an hour or so playing with a navigation simulation they were developing. It needed work but was a lot of fun and showed considerable promise. Van Doren was quite impressed and has referred to it often as an example of software heading in the right direction.

I suggest we look at the whole project carefully and assess its overall value to us. (The pilot of the TV show will be ready for viewing later this month.) Perhaps Brenda L. could take this on. Cynthia S. might want to look at the quality and nature of the LOGO work they are doing. If we like what we see we probably want to bring in the advertising folks etc. since our support of the project would amount to sponsorship of the TV program. Presumably part of the Atari $ could come out of the advertising budget.

Bank Street Reporting
Spring 1982



Humpback whale and cub by marine illustrator Richard Ellis from "The Book of Whales" (Alfred A. Knopf).

CONVEYING THE EXCITEMENT OF SCIENCE

Project in Science and Mathematics Education

Eleven-year-old C.T. Granville sits on the foredeck of the ketch "Mimi," alone and quiet in the darkness during his first night at sea. Suddenly the sound of an enormous creature breathing emerges from the water. The young boy is terrified.

"Now this is scary and interesting," says Sam Gibbon, executive director of a Bank Street television series on science and mathematics for children. "Here's a kid from a farm in Ohio, feeling lost and lonely, miles at sea. And here's a huge creature, in the ocean next to the boat, taking a breath. From this one moment can be drawn an enormous amount of science and math."

As it happens, the sea creature is a whale — a rich resource for teaching and learning. The study of whales and their environment leads naturally to issues such as biological adaptation and survival, the food chain, and the interdependence of species. Similarly, because much of the series takes place on a boat, questions about the mechanisms of buoyancy and about methods of navigation arise. Combined, these story elements give rise to underlying questions about principles of physics, mathematics, geometry, and astronomy. As the crew navigates the ship, locates whales and their feeding grounds, and records data, there are many opportunities to illustrate techniques of measurement, mapping, graphical representation, and the use of computers.

Bank Street's Project in Science and Mathematics Education is creating the television series through a $2.65 million contract with the U.S. Department of Education. Twenty-six 15-minute episodes will be presented in the form of an adventure story about two scientists and a group of teenagers on a whale research expedition *(see Storyline and Cast of Characters on page 3)*. The story will stand on its own as a drama and may also be used with supplementary classroom materials. Both the television series and supplementary materials will exploit the educational potential of new communication technologies.

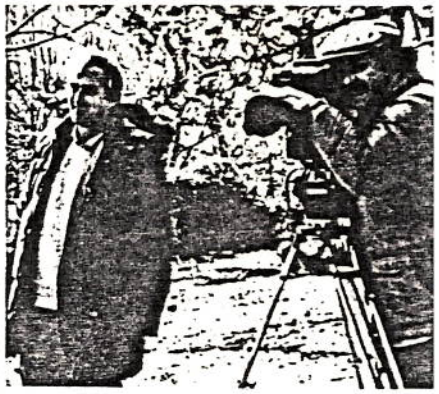
Bank Street has outlined an ambitious set of goals for the project:

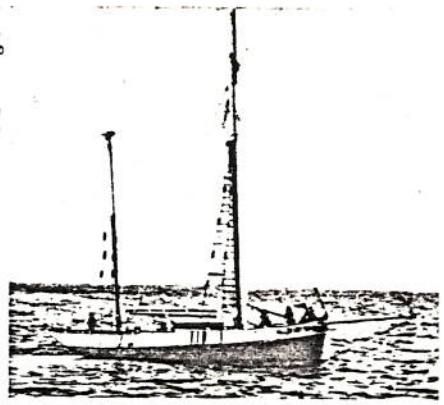
Meet the Director. . .

Samuel Y. Gibbon, Jr., director of the Project in Science and Math Education, has a distinguished background in children's television and the academic world. He began his career with CBS in 1957 and was associate producer and writer for "Captain Kangaroo" for seven years. He has been associated with the Children's Television Workshop since 1968 — as producer of "Sesame Street," executive producer of "The Electric Company," and executive director for the developmental phase of "3-2-1 Contact," the CTW series on science, technology and the environment for 8 to 12 year olds. He is a lecturer on education at the Harvard Graduate School of Education.

Gibbon received a B.A. in English Literature from Princeton University in 1953. He was awarded a Woodrow Wilson Fellowship and studied Elizabethan theater at the University of London as a Fulbright Fellow. In the U.S. Army from 1954 to 1956, Gibbon was assigned to Special Services Entertainment — as producer-director of soldier shows and actor with the Seventh Army Repertory Company on two European tours.

He won two National Academy of Television Arts and Sciences "Emmy" Awards — as producer of "Sesame Street" in 1970 and executive producer of "The Electric Company" in 1977. Gibbon's publications include "Sesame Street, The Electric Company, and Reading" in the volume *Toward a Literate Society: A Report from the National Academy of Education* (McGraw Hill).





Photos: Anne Darling and Barbara Rios

From top left: on location with executive director Sam Gibbon; special assistant Dick Hendrick interviewing children; taping a background briefing with scientist Kim Kastens; evaluation specialist Cindy Char and curriculum development coordinator Jeff Travers meeting with science teachers; the ketch "Mimi."

Curriculum Goals

The television series will present a chunk of the real world, rich with information about whales, ships, the sea, marine science, and techniques of survival on land. The curriculum is organized around three sets of concepts and principles intended to give order and coherence to these facts.

• **Substantive concepts.** The physical and life sciences are usually taught as separate disciplines. Bank Street will present scientific concepts and principles as an integrated web of knowledge linked naturally and directly to the phenomena observed in the television series. We have chosen as an embracing concept the notion that the earth is a vast ecosystem made up of subsystems. Within this master concept, we will explore both biological principles having to do with adaptation and survival and physical principles having to do with matter and energy, which apply to nonliving as well as living systems.

• **Scientific method.** Our aim is to orient children toward rational and empirical inquiry. We want them to attack concrete problems by using the scientific methods of observation, interpretation, hypothesis creating and testing and the ill-defined but essential role of hunches, tinkering, and learning from failures. We will emphasize the role of technology in the scientific enterprise.

• **Mathematics and measurement.** These are important tools that enable scientists to collect and summarize data and to express concepts clearly and precisely. Among the specific principles in this set are (a) numerical representation of physical phenomena, (b) graphical representation of numerical data, (c) graphical representation of two-variable relationships, (d) map construction and interpretation, and (e) some elementary statistical ideas such as averaging and sampling.

→ • To enhance children's understanding of science, mathematics and technology, • To help children master principles of the scientific method which they can apply to their own investigations, • To help children recognize how science and technology can be used to solve problems they encounter, • To help children understand what scientists do and consider careers in science and technology for themselves, • To foster an interest in science among boys and girls from all backgrounds, • To provide teachers with a model of how to integrate the microcomputer with the classroom curriculum, particularly in science and mathematics, and • To provide teachers with a new model of science and mathematics education, incorporating new technology as both content and process.

"In developing the curriculum and storyline, we have sharpened our definitions of these goals and begun to distinguish among goals that can be achieved through the TV series itself and those that are best achieved through activities in the classroom or home with the series acting as a catalyst," Gibbon explains. "The series will convey facts about whales, ships, the sea, and techniques of survival on land. It will present models of scientific thinking and show various technologies in use, including computers. These can be incorporated directly into the TV segments and, according to research evidence, absorbed and retained by child viewers."

Two packages of supplementary materials will be available with the TV series, one for classrooms with computers and another for classrooms without. The software developed for classrooms with computers will help students learn some of the many ways in which computers can be used — for experiments, simulations, data collection, analysis, and graphing as well as puzzles and games. Students will also receive an introduction to programming in the LOGO language, a powerful higher-level language which has been designed especially for easy access by children. For classrooms without computers, the package will include (a) activities that parallel those the children do on computers, (b) guides to math and problem-solving skills, (c) written materials — charts, graphs, and student worksheets, (d) notes to teachers, and (e) a cross-reference of subject matter and index to classroom materials.

Explicit teaching is possible within the TV series to the extent

The Storyline

Three teenagers join two young scientists from the Noyes Institute of Ocean Research (a fictional amalgam of several actual research institutions) as student assistants on a seaborne scientific expedition tracking and studying humpback whales. The institute has chartered a boat called the "Mimi" and the skipper has, somewhat reluctantly, taken his 11-year-old grandson for the voyage. So they are a captain and crew of six when they set sail.

The plot has 26 15-minute episodes, some centering on problems directly related to the scientific mission and some on the unplanned adventures that result when "Mimi" is damaged in a heavy storm and must be beached for emergency repairs. The episodes have been grouped into 13 pairs, allowing for public or commercial broadcast as a series of half hours. In most of the pairs, the first episode will end in a cliffhanger, confronting the characters and viewers with a problem that is to be resolved in the second episode. For some of these, supplementary materials can be used in the classroom after the first episode of each such pair to allow children to try their own hands at solving the problem confronting the characters — for example, figuring out the position of the boat when it is lost at sea.

Cast of Characters

Clement Granville. Jack of all trades and master of many, Granny is owner and captain of the ketch "Mimi," named for his late, beloved wife. A crusty manner belies Granny's basic warmth. As the story develops, Granny grows closer to his grandson and forms a bond with the teenager, Rachel.

Anne Abrams. Brainy, attractive oceánographer and research fellow at Noyes, Anne is adept at deflating an overblown ego or a tense moment with a gentle joke. A fascination with computers and talent with water colors lead Anne to create beautiful computer graphics. She is a mentor for Arthur and develops a close relationship to Sally Ruth, who teaches her to sign.

Ramon Rojas. Young marine biology Ph.D. and Noyes research associate, Ramon is at once wet behind the ears and wise beyond his years. Born in a tiny Puerto Rican fishing village, marine biology is his path back to the sea. Ramon is confused by his feelings toward Anne and cheerfully oblivious to Rachel's crush on him.

Sally Ruth Cochran. A student at College of the Atlantic, Sally Ruth has a special interest in whale songs through her two obsessions — scuba diving and communications. Deaf from an early age, she lip-reads and signs perfectly. Definitely a survivor, Sally Ruth embodies the qualities of strength and gentleness, competence and sensitivity.

Rachel Fairbanks. Rachel, like many adolescents, is really two people. Both are 16, white, Connecticut suburban, and accomplished sailors. One has come to hate and reject many of the traits she sees in — but shares with — her parents. The other is helpful and engaging. Through sailing, a special relationship develops between Granny and the "nice" Rachel.

Arthur Spencer. A 16-year-old black kid from a large middle-class family of achievers, Arthur is an honor student and electronics wizard. His favorite diversion is electronic games, and his friends call him "Vader" or "Mr. Screen." A mutual interest in computers fosters close ties with Anne. Arthur helps Rachel see her two "selves."

Clement Tyler "C.T." Granville. At home on the farm in Ohio, C.T. is responsible, inventive, enthusiastic and funny. Aboard the "Mimi" he feels misplaced, even rejected, at first. On the island, C.T. begins to reveal his life skills. He brings to science the 11 year old's "howcums" and "gee whizzes" that teenagers often cannot bring themselves to express. The development of his relationship with his grandfather is a central theme.

that it is natural for the scientists to teach the student members of the crew. Classroom activities and microcomputer exercises will extend many additional ideas that are implicit in the series itself. They will also give children opportunities to manipulate materials and apply principles in concrete fashion.

Teaching by example is particularly important in the case of the project goals that have to do with children's attitudes toward science and appreciation of its human uses. "We hope that the TV series can communicate the idea that science is an exciting and rewarding human enterprise which is not the exclusive province of white males," says Gibbon. "We hope it can show how science and technology contribute to each other — while raising issues about the consequences of applying science and technology and about the responsibilities of both scientists and the public. Our strategy is to try to create these attitudes and sensitivities, not through explicit teaching or preaching, but through the development and interplay of characters in the TV series."

The Project in Science/Mathematics Education is a collaborative venture under Gibbon's overall direction. Microcomputer applications for the classroom are being developed by Bank Street's Center for Children and Technology and two Cambridge-based firms — Computer Learning Connection, Inc. and Technical Education Research Centers. Television production is being undertaken by Peace River Films, Inc., also based in Cambridge.

Bank Street personnel include: Lorin Driggs, special assistant to Sam Gibbon; Karen Sheingold, deputy director for evaluation; Jeff Travers, coordinator of curriculum development; Barbara Dubitsky, coordinator of classroom materials; Richard Hendrick, special assistant for scripting and production; Jan Jewson and Cindy Char, evaluation specialists; Tom Roberts, assistant evaluation specialist, and Susan Smith, content researcher. ■

Barbara Rios

Children program computers in classrooms at the Bank Street School in connection with research by the College's Center for Children and Technology.

More information about Bank Street. . .

Bank Street College, founded in 1916 as the Bureau of Educational Experiments, is a leader in early childhood education and a pioneer in improving the quality of education for children and youth. We at Bank Street perform three interrelated activities — teaching, research, and community service — through a Graduate School of Education, demonstration model School for Children, Research Division, School and Community Services Division, and Publications Group.

The **Project in Science and Mathematics Education** is part of the Research Division but also includes personnel from other divisions of the College as well as interdisciplinary specialists from outside. Indeed, this is a hallmark of the Bank Street approach to education: the bringing together of people from different backgrounds to integrate and weave their professional training, skills, and experiences in an effort to find solutions to the educational problems of our complex society.

Among Bank Street's other programs and projects in science and mathematics education:

• **Center for Children and Technology.** Doing research on (a) how electronic technology, such as the microcomputer, may influence children's learning and (b) acquiring reserach-based knowledge on how to use technology to the developmental and educational advantage of children. Center staff teach the course "Microcomputers in the Classroom: Practice and Theory" in the **Graduate School of Education** and "Microcomputers: An Introduction through the LOGO Language" through the **New Perspectives** series of one-credit and two-credit summer or weekend graduate courses. The Center also offers computer workshops on classroom uses of microcomputers. (For technical information and to arrange workshops, call Barbara Dubitsky at (212) 663-7200 extension 389.)

• **Expanded Programs.** From the Bank Street Graduate School of Education, providing inservice training for teachers — at the teachers' own work site — via course work, seminars, and consultation in areas such as curriculum development and evaluation. Among the courses offered is "Mathematics for Teachers."

• **Tiorati Workshop for Environmental Learning.** At Harriman State Park, providing training in environmental education for teachers from inner city and suburban schools. "Interrelated Science Workshop in the Urban Environment" is a city-based version of the Tiorati Workshop course. It helps city school teachers integrate science with other areas of the curriculum.

Bank Street College is located on the Upper West Side of Manhattan. Our neighbors include the Cathedral of St. John the Divine, Goddard Space Flight Center, Columbia University, Barnard College, and the Manhattan School of Music. We are ten minutes by public transportation from Lincoln Center for the Performing Arts and twelve minutes across Central Park to Fifth Avenue and New York City's Museum Mile.

BANK STREET COLLEGE
Project in Science and Mathematics Education
610 West 112th Street
New York, New York 10025
Telephone (212) 663-7200

To: Ray Kassar
From: Alan Kay

September 25, 1982

"Atari as a Way of Life" means that our company will subtly touch everyone's life many times a day. Our themes of Fantasy and Sharing are the fabric of a new kind of environment -- homes, vehicles, communicators, instruments, tools, materials -- all shaped from information. The visual arts have been called the imitation of life -- the computer arts are the imitation of creation itself.

Monterey was a critical turning point for Atari. Almost everyone saw that Atari must swiftly network its immense installed base of games and computers. Information systems that can be worn and lived in are the next step in making Atari a way of life.

Deep and personal contact with information tools and games through direct touch, gesture, and speech is the key. When this new kind of user communications interface is combined with the richness of the world's knowledge, a new Renaissance will have been created by Atari. The name of Gutenberg shines proudly through the centuries. Atari will be as well remembered.

Everything is important in a scheme as grand as this -- hardware, software, user interface, content, funding, timing. How can priorities be assigned?

Disneyland is a physical environment for Fantasy, sharing, and the Learning that happens for free when attention is focused. We want an Informationland that extends into people's everyday lives. The original Disneyland was much smaller, yet it didn't just rely on the Disney themes and characters. Solid content was also provided in the form of a few major rides such as "Pirates of the Caribbean" -- still one of the great experiences.

Using the outstanding initial design as a base -- every walk in the park was storyboarded to ensure that just browsing about would be a pleasureable experience. Disneyland quickly generated profits. The magnificent structures of the current parks were built from part of these profits. The total cost of the Disneylands was high, yet only a modest amount of upfront funding was required because of their multistage plan.

The Encyclopaedia Britannica part of Atari Life is our "Pirates of the Caribbean." It is one of the rides which must be present when our initial informationland opens its gates 2-3 years from now.

As with the Disneyland plan, Informationland can be built as an enjoyable attractive and useful kernel for a modest investment. If the concept is any good at all it will immediately start to generate profits and funding for its next stages.

How good can the initial offering be? Consider the combination of an Atari Product/APX for both VCS and HCD on millions of the installed base with no cart overhead. The services contemplated by TIES can be offered years earlier to a much larger initial group. The next stages of Atari-Tel can be included. Electronic Mail will actually be useful with our large number of users. Network games will flourish. All this and more is Informationland -- The Encyclopaedia has become it -- or vice versa. Yet, the rich enfolding of the world's knowledge is also available in a much easier to access form.

This project is more than a business -- it is the future for Atari and the world in which we live.

Inter Office Memo

CORPORATE DIVISION
Corporate Research

To: Alan Kay

From: R. Stein

Subject: encyclopedia project Date: 10/29/82

Assuming we decide to go ahead with the online encyclopedia, this strategy at worst will cost us some time. In exchange for the lost time, however, I expect we could end up with a much stronger product.

I think it's quite likely that EB will go for this idea - research and experimentation for a year and then a decision - especially if we agree to make them privy to most of the research results. They are not that keen on rushing an online encyclopedia to market anyway, given their fears that such a product would compete with the print version.

Inter Office Memo

CORPORATE DIVISION
Corporate Research

To: Alan Kay

From: R. Stein

Subject: encyclopedia project Date: 10/29/82

A recent meeting (the first) of the ad hoc/informal encyclopedia project committee came up with some interesting ideas regarding the short-term online encyclopedia. There was unanimous opinion that the online encyclopedia should not be put into a development phase at this time. A complex of reasons boils down to the following:

A) We don't even have a working model of what we want so how can we expect to have something on the market in 3 years. (And a close variant) If we don't have a model, then it is really still a research question and should not be put into development at this time.

B) An online encyclopedia that is "Nexis with a better interface and some PLP graphics" may not be good enough - especially in three years. The major concern here seems to be the limitations imposed by existing CRT displays.

While I don't accept "B" as given, I agree that we need to do some experimental work, free of the pressures and constraints of product development before we can decide whether or when we have a model that is ready for development.

Specifically it was suggested that we could bring in the seeds of a development team now and let them work on the job of "putting the existing database (EB etc.) online," working particularly on some of the problems and developing the tools related to manipulating a database of this size and complexity. Second, a small number of people could work on designing an interface, while others study communications questions etc. Then nine months or a year down the road we can decide whether to go for a short-term product or not.

In addition to allowing us to proceed with a lot more confidence and knowledge, this strategy has the compelling advantage of not requiring the hard sell (to HCD, EB, and to Ray) of the online encyclopedia at this time - before we have a model, before we address the communications/ distribution questions and before we've done our business plan type homework.

4. Microcomputer Software and Videodiscs

I assume that at some point we will have a go-ahead to do at least a small number of microcomputer programs and videodiscs - as products - related to the encyclopedia project. There is a lot of preparatory work that can go on now. We should sharpen formulation of goals, identify subject areas, solicit specific ideas and begin to choose groups to develop them. Brenda very much wants to tackle the microcomputer software. We should hire someone to head up the videodisc aspect.

5. Databases - Treasure Hunting

The IE can be expected to provide a gateway to other databases (eg. The New York Times, Dow Jones, etc.). In many cases we would probably not be able to get these databases on an exclusive basis. There are still a large number of databases, most of them still in print form only, which we could probably buy exclusive rights to. I'm thinking of such periodicals as the Harvard Medical School Newsletter (written for the layperson), Archaeology, American Heritage, Audobon, The Whole Earth Catalog etc.

We should hire someone to survey all available "databases," recommend the winners and advise us on such things as who owns/controls them .... This is definitely something that needs to be done NOW, before all the opportunities get gotten by someone else. I like your idea of having Stuart Brand advise on this - if not actually do the work.

6. Images - More Treasure Hunting

There are unfortunately a finite number of great images - still and motion. Short of working out deals with Time-Life or National Geographic (not impossible) we are going to have one hell of a job finding affordable images for the IE and all its less talented predecessors. Even if we did work out a deal with Time-Life or NGS, those collections are not all inclusive and we would still have the problem of motion pictures, for which there are not any equivalent collection in terms of comprehensiveness and excellence. Suggest we hire someone to start an extensive effort in this area. Bargains are going to get harder and harder to find.

7. Going Public

Sometime in the not too far distant future we are going to be able to announce publicly the existence of the encyclopedia project at Atari. If carefully conceived and carried out we can use the announcements to attract and orient people around the project. A few specific suggestions.

A whole strategy should be prepared in terms of conferences to present papers at, journals and magazines to submit articles to etc.

A major piece by A. Kay and C. Van Doren should be written on the theme of the leap in mankind's abilities that computers will enable and the role of the encyclopedia project within it. The combination of A. Kay and C. Van Doren is quite unique and by itself makes a statement about the synthesis we are working toward.

Glen Keane's pictures have had an overwhelming effect on many of the people we've shown them to. On more than one occasion people have fondled them and looked at them over and over again. It is highly unusual to see this sort of dream represented so artfully. I suggest that we get Glen to fix up the pictures that need fixing and then prepare to publish them.

8. Conference

One of the ways to engage leading theorists and researchers in the project is a small working conference, the sort that is so seminal and rich in new ideas that it is referred to for years, "As Soandso said at the Yadayada Conference." I see us inviting about 25 people representing the full spectrum of intellectual endeavor. Each participant would present an original paper on a relevant topic (the charter on this would have to be well thought out). Taking place over a week or more there should be ample time for lively discussion and an attempt at synthesis where possible. While most of the participants should be recognized world-class figures a number of (younger) people should be invited at least as observers - to ask questions and inject an irreverent element. (Such a conference should yield at least a book and an edited video documentary which can be used to broaden the range of its influence, on the project and in general.)

Presumably the participants or a subset could be constituted as an ongoing advisory committee. Perhaps our Mortimer Adler, or Mortimer Adlers will come

9. The Atari Lectures

Related to the conference idea is the possibility of endowing an annual lecture series at a university. For example Columbia could present the Atari Lectures on the Expansion of the Human Intellect (concentrating on but not limited to the role of technology. Presentations could either represent an attempt at synthesis (Marvin Minsky on the First 25 years of AI) or somewhat more exploratory (So & SO on "Toward a Concept of Interactive Art"). It seems possible that the process of establishing the lecture series could begin to lay groundwork for the Atari Institute.

An interesting variation on the above (to do in addition, not instead of) would be to offer a prize for the most original paper by an undergraduate/graduate on the same general themeas above.

10. Question Journals

The idea here is to get various people in various institutions and venues to keep a running log of all the questions that occur to them or that are asked of them over a given period. Teachers, students, families, doctors, librarians, museum guides, people on a nature walk, secretaries, businessmen etc. The log would include a list of questions, the circumstances under which the questions arose and whether and how it was answered. My hunch is that there is a wealth of insight to be gained from this - the range of questions, the study of current methods of answer seeking, ~~be~~ The depths to which people chase original and subsidiary questions. All this and more will help sharpen our understanding of what is needed.

People could be lent tape recorders to record the information and be given an Atari 400 or equivalent upon completion. I suggest we start out with a couple of people and see if it's practical and/or wortwhile.

11. Business Plans, Evidently a Sine Qua Non

Let's hire a congenial MBA as soon as possible. The person's charter should be to start looking into development of a business plan for the IE. Since such a plan will obviously be a long time in development, as a warmup they can work up a business plan for the microcomputer software and videodiscs so that we can pass them on to the operating divisions when appropriate.

12. A Study of Learning Environments

Let's find a few bright graduate students, with keen eyes and the ability to write who would be interested in taking as their thesis topic the study and comparison of various learning environments, particularly some of the informal variety such as the Exploratorium and the Capital Children's Museum. We want to look at how both kids and adults function in these environments - what works, what doesn't. We especially want to understand the question of motivation, shared learning etc. A lot of important generalizeable lessons just waiting to be synthesized. It would be particularly interesting if we could get graduate students from different disciplines - eg. anthropology and cognitive science.

13. What's In a Name?

The word encyclopedia does not cut it. Too many years of furniture duty and dusty tome connotation have taken their toll. In fact, I would guess there are no available words or combination of words in English which can convey the richness of the IE concept. We need to come up with a word which implies the ultimate fact reference tool (Hitchiker's Guide), learning machine and adventure game. We may have to invent the word and win people to its meaning and use over time. One good thing about searching for a name is that it tends to focus and sharpen your thinking about what you are doing.

Inter Office Memo

CORPORATE DIVISION
Corporate Research

To: See Distribution List (page 2)

From: Alan Kay AK

Subject: Videodiscs Date: 12/20/82

Both RCA and Pioneer have visited recently at our invitation. If anything was confirmed, it was the ambiguity of the current technology. Separate reports on the meetings are being generated by several Atari interest groups. What follows are my feelings about our plight.

Compared to tape, Vidiscs offer slightly better images and fast random access to material. But in the tape world higher quality Beta Max hasn't been competing successfully with low quality VHS offering 10 times the number of available titles. Random access is not often used for movies, performances and shows. Both disk and tape have slomo and visible search. Branching traverses through material requires instant random access - but disks can take seconds or longer to search. For the next several years only tapes could be recorded in the house - recordable disks are now being shown in the lab.

Compared to each other, the features offered by RCA and Pioneer complement each other. RCA is much lower cost, shows a lower quality image, has slower access, and has problems with contamination and number of multiple plays. Its frame format allows multiple heads but makes slomo almost impossible. Pioneer is exactly the opposite.

A frame buffer would help both technologies, especially the RCA. Still any Vidisc strategy for Atari must involve both technologies at present - too bad.

Most dynamic branching systems (Aspen, SEGA) require at least two drives or heads. Even with these it is clear that only very specially planned games will work - the SEGA fortunately is terrible.

After cost has been dealt with, the major problem is production, both visual material and software branching strategies. The master filmmakers Lucas and Spielberg will be critical here. The current plan for local productions is to use 1" masters. Divisions and CR will all have relatively inexpensive 3/4" drives and editing strategies. The edit control information can later be used to drive a compatible 1" assembler located with other one of a kind television equipment as a corporate facility.

Distribution List:

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ACK:km

To: Alan Kay January 10, 1983

From: Scott Fisher, Bob Stein

Re: Videodiscs

Our goal here is not to propose a grand Atari videodisc strategy. A lot more groundwork has to go on before that can be done well. Our purpose here is simply to offer some suggestions as to how Atari can start to come to grips with a complex of issues that must be considered and get started.

Why is trying to understand the videodisc question like wrestling with a greased pig? They're both big and slippery. With that caveat in mind, let's go!

Part of the difficulty in understanding videodiscs is the potentially broad range of applications and consequently the greater number of markets the technology intersects with. Videodiscs are so many things to so many people.

-- To the movie industry videodiscs are a vehicle for delivering movies to individual homes in a hard-to-pirate medium.

-- To record publishers it is potentially the future of the record industry.

-- To game designers it may be a viable short-cut to high resolution graphics (at least for backgrounds).

-- For people in the knowledge game it holds out the possibility of an interim solution for the dynamic multi-media book.

-- To computerists it's a medium on which to store vast amounts of digital data or equally impressive amounts of "visual" data in the form of pictures; sound too.

Assumptions

1. This memo is predicated on the firm expectation that videodiscs constitute a viable consumer technology with wide-ranging entertainment and learning applications and therefore, are a key technology in Atari's future.*

2. What You See Is What You Get (at least for a few years)!

   Whatever may be in the labs, the technology has reached a plateau and short of minor improvements (more powerful motors, faster seek algorithms, sturdier mechanisms, etc.) for the next two years or so the player base (both in terms of the consumer market and what might be available to coin-op) will be made up of machines basically like those we have today. Multiple heads or full-frame buffers, sound over still, etc. are unlikely to be generally available at reasonable cost before 1985, if then. (We're considering the RCA "interactive" player in the "already seen" category.)

3. We're Real Early On the Learning Curve!

   The number of commercial videodsics whose content was designed and produced originally for disc can be counted on one hand. The number of consumer discs designed to be controlled by a human through a microcomputer is nil. We don't even know of any in the planning stages. This is not said to create a sense of confidence at Atari that we can wait indefinitely to get into the market, but to emphasize the point that we (humanity, not Atari) have had precious little experience with the medium and many of its most interesting uses are likely not to have been thought of yet.

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* Lest there be too much skepticism about the viability of the consumer videodisc market (especially given early press accounts of supposedly dismal sales), it should be pointed out that videodiscs enjoyed the best first year sales of any big-ticket item alone. Consider the following statistics: In the first year RCA sold 12 times as many videodisc players as all manufacturers of black and white TV sets sold in the first year. When compared to color TV sets the number is even more impressive - 16 times as many videodisc players the first year. (We're talking units, not dollars.) In terms of dollars, the first year sales of RCA players and discs exceeded the combined first year sales of b&w TVs and color TVs, and VCRs by 90 million dollars. And all this with a minimum amount of software. The Milton Berle (credited with launching the mass TV market) or Visicalc (doing the same for micros) of videodiscs has yet to appear.

Assumptions Cont'd

4. Videodiscs are a subset of the broader video question

The advent of the videodisc occurs in a broader context. We are on the verge of significant developments in the field of video itself - high definition TV, 3D, and digital TV are all on the way within the next 10 years. Also, the courtship between computers and video is developing apace - computational video is the wave of the future. A correct videodisc strategy must be developed in this broader context. For example, while in one sense videodiscs are viewed as a kludgey, awkware technology, transitional in nature on the way to all digital picture creation, it is clear that if you want to get a headstart in the area of interactive video (both in terms of leaning how to do decent programming and in terms of the marketplace) videodiscs are the only way to fly.

Points and Recommendations

1. Applications should be the driving force behind hardware decisions.

A lot of the discussion at Atari re: videodiscs has centered on the question of hardware (wish lists of modifications, laser vs. capacitance, etc.) On the whole these discussions seem premature in that they tend to be taking place in the abstract, that is without a clear idea of the applications the hardware is to be used for. We suggest that major decisions be postponed until we have a major brainstorming effort in the area of potential applications. This is especially important given the various uses the different divisions may come up with. It is quite likely/possible that coin-op, CED, and HCD may have quite different hardware requirements. In addition there are many exciting applications which may transcend the products we associate with the various divisions at this time.

2. Good videodisc programs will represent a synthesis of the visual storytelling skills of the film maker and the interactive branching knowhow of Atari software designers. To get to this synthesis, the filmakers and software designers will have to learn each others vocabularies and perspectives. Lucas, Spielberg and other filmakers should be brought into brainstorming sessions and project planning from the beginning.

The task and importance of building up experience in the videodisc programming medium shouldn't be underemphasized.

3. Many parallel efforts/no czars, maybe ombudsman

Given that we are early on the learning curve it makes sense to consider supporting a number of videodisc projects within Atari, within divisions and across divisions. The theory being that we plant a number of seeds to see which ones grow: better a lot of smaller projects than one or two BIG projects.

There shouldn't be any one person empowered to put thumbs up or down on every project because there isn't one person today who could hope to recognize all the valid applications people will come up with. Expert is a relative term and while there are people a little further along the learning curve (and thus are 'experts') we wouldn't want to invest them with the power of a czar.

On the other hand, we definitely want to take advantage of Atari's size and diversity. A videodisc ombudsman should be appointed to make sure the lessons learned on one project are transferred to others and to have an overall sense of all videodisc resources - machines and people - inside and outside the company.

On the business side, we suggest that all videodisc 'deals' - hardware and software - be funnelled through one person. This is the only way to maximize Atari's clout effectively.

4. The FIRST most important hardware issue for Atari to address IS NOT player modification, but the design and development of an INTERFACE between the videodisc and Atari computers that would allow program designers to fully utilize the technology that is already here (and that will be in the marketplace over the next couple of years).
First efforts should be:
   a) A cartridge (and connecting wire) that would turn the VCS and/or 5200 into a low-level videodisc controller.
   b) An interface for the 800 (1200, etc.) which can at least transfer feedback from player to computer about what track is being read and at best one that permits you to overlay computer graphics on the videodisc signal.

c) Modify Atari Antic chip to ensure compatability OF Atari computer graphics with NTSC video. Work in this area has already been done for the ERIC system and could easily be expanded. ERIC constitutes a headstart. Let's not squander it!

5. Publishing Model

If a careful strategy is worked out, there is no reason why Atari shouldn't become the Atari of the Videodisc industry or the Warner Records of the record industry. Key to this is the adoption of a publishing model, where Atari functions in part like a record or book company which publishes the work of independent artists. This is not to say that each of the divisions shouldn't produce some Videodisc programs in house, but that in the long run, Atari needs to call on the talents of a much larger group of people than it can hope to employ. This has as much to do with the sensibilities of artists and the geographical location of Atari (Sunnyvale is not NY, LA, SF, or Boston) as anything else.

Presumably, Atari should solicit ideas and proposals for projects from a broad cross-section of independent artists and producers. Atari would then choose a number of projects for development with Atari functioning as an executive producer/editor - working with outside production companies, etc., to refine concepts and monitor the production itself. Who manufactures the discs is a subject for discussion (although in the short run obviously Atari is not going to press discs). Atari perhaps with Warner entities would control distribution.

6. Range of publishable disc types

An advantage to the complexity of the evolving videodisc technology is the range of program levels on which discs can be published.

At one end of the spectrum are programs for standalone players. Atari should definitely do game discs on the order, but better than, the Kidisc.

Another level can be developed with standalone programs upgraded by adding computer control by a floppy disc and a suitable interface. Control of the material on disc from the Atari computer can allow simple sequencing, browsing or games programs with good quality images. Popular movies in standard disc format (CAV) may be transformed into a home computer game with overlayed graphics.

Development of material for 1985/86 machines (videodisc players, computers and game machines) can include more complex interaction, branching structures and descriptive programs stored on videodisc. As the disc player becomes more accepted as a true peripheral for the computer, more complex programming efforts can be published.

Spinoffs: We need to be constantly aware of major possibilities which arise in the course of videodisc work. For example, the possibility of using Coin-op's manufacturing capablities to support the initiation of a business which offers point of purchase video display units ala ERIC should certainly be considered.

7. Videodisc Facility

We distinguish between a production facility capable of producing the 1" tape required by the disc manufacturers for mastering and a development facility capable of testing out ideas to be used in actual productions. We recommend against setting up a production facility at this time for two reasons:

a) It's extremely expensive if done right, probably between four and eight million dollars. Given that we probably couldn't use the full capacity of such a facility ourselves this is probably an unnecessary expense. Also, there are many established production houses, some right in our Sunnyvale backyard which would supply this capability for us now at expensive but reasonable costs.

b) It's too early to know exactly what configuration we might want in a production facility; we probably need to be involved in actual videodisc production for a few years before we would be confident in spending that amount of money and be sure that we are building a facility that would serve our needs.

On the other hand, we definitely recommend setting up a development facility to serve the work in the divisions (including outside artists, etc.) who would be working on programs to be published/distributed by Atari. The cost of such a facility should be on the order of one-half to one million dollars.

8. Hardware Wars

We have been visited by RCA and Pioneer, the major players representing the two videodisc formats - capacitance and laser respectively. VHD, the third

format, seems to be indefinitely on hold. Each technology has its advantages and disadvantages depending on the application. For now, given technical and market realities, we will have to work with both formats. Both companies expressed an interest in working with (companies like) Atari to develop custom hardware. For discplayer features requiring major Research & Development efforts, both companies raised the possibility of Atari co-funding such work (which says something about how enthusiastic they are about sinking a lot more money into the technology on their own).

We should speak to the other manufacturers - Sony, Philips, and Matsushita - so that once we have established our hardware and software requirements and priorities we are in a position to strike the best deal/deals possible.

Immediate Steps

1. Hold a major brainstorming meeting, the central purpose of which is to begin to define the range of applications that Atari may address. We want to come out of the meeting with a much clearer idea of the sorts of videodisc programming appropriate to Atari - the Atari look, style, niche, etc. Clearly this will be an evolutionary process, but we need to start the ascent from a higher plateau.

   a. The nature of interactivity and how it relates to the potential uses of the videodisc.

   b. How to use the combined features of the videodisc and computer.

   c. Potential of standalone player for products with the Atari name on them.

   From this meeting we should come away with enough of a sense of the range of applications we are interested in such that we would be able to set hardware priorities - both what is needed in an interface and what sorts of features we need built into future machines.

   We may want to invite a few key people from outside Atari, including other WCI people actively considering videodiscs, and some independent producers we may want to work with who have demonstrated some imagination with regard to videodiscs.

2. Act on appointing an ombudsman to facilitate projects throughout the company.

3. In order to make sure that Atari is in a strong position vis a vis the video/computer marriage, a company-wide group should be created to consider a number of hardware-related issues and help define longer term research directions for both hardware and software.

   Some of the issues that the group should explore are:

   a. Specs of an interface between Atari hardware and various videodisc players.

   b. The potential of OEMing an Atari videodisc peripheral.

   c. Mass storage of digital data along with images on videodisc.

   d. Erasable, writable, optical disc players.

   e. Sound over still image.

   f. Multiple-head players and/or frame buffers.

4. The Warner Connection

   Videodisc design, production, and manufacturing is very, very expensive, especially for a consumer media product. All possible leverage must be brought to bear if innovative programming is to be produced and marketed successfully. For this reason, we suggest that Atari take the lead in considering and urging WCI to consider ways in which WCI's varied entities might contribute to a major effort. Some questions which might be considered are:

   a. The use of Warner production facilities.

   b. Distribution through existing WB and Warner Records channels.

   c. Tie-ins with Warner Publishing entities, e.g. - DC Comics.

   d. Mastering and replication deals with disc manufacturers which would include Warner Records, Atari, and WB.

   e. Should WCI go into the mastering and replication business?

f. The use of existing (and future) Warner TV and movie footage in Atari videodisc products.

5. Marketing and Testing

We suggest that Conrad Jutson's group begin a significant marketing study of videodiscs, both in terms of the key markets for Atari to address and the likely channels of distribution (e.g. - will Atari videodiscs be sold in record stores, video stores, computer, or toy stores?). There is no reason to do general market testing, i.e. - asking the public at large what sorts of videodisc programs they want. People who have not been exposed to the technology do not have the imagination necessary to make this sort of market research useful. On the other hand, users of the technology, particularly where there are children in the household, may be a rich source of information as to the market that Atari should attack.

6. Securing Rights

In anticipation of videodisc games developments, it would make sense to secure rights and/or arrange for joint ventures with DC Comics, Disney, Sesame Street, Henson's Muppets, etc.

Alan,

To: Alan Kay
From: Bob Stein

There seems to be some question as to whether the position of your assistant will be filled or left vacant. The argument against seems to be that you don't have enough work for two people. This probably is true if the assistant is functioning as an executive secretary. Since that's mostly what Pat Cooley did, I can see why some people might have that opinion. However, when I think about what an assistant could be, I come to the opposite conclusion - you need one desperately.

Your assistant should be able to do the following with elan and finesse:

a) Be your eyes and ears at meetings you can not (or should not because of their relative importance) attend, but need to know what transpired.

b) Receive and return a significant number of your phone calls and letters, especially the unsolicited variety, thus providing an effective filter for callers as well as a way to cut down on the amount of time you have to spend on the phone. Being an effective filter INCLUDES making the callers etc., feel as if they have spoken with someone who understands the purpose of the call and can be relied upon to take the appropriate action. There are two levels to this; arranging meetings etc., and carrying on informed substantive discussions. Wanda is a great example of the first. When I started dealing with you and Atari, Wanda was superb at taking messages from me, getting an answer from you, and arranging what needed to be arranged, etc. Mason Southworth, Lewis Branscomb's assistant, is an example of the second. When I needed to call Branscomb a few years ago, trying to clarify a statement he had made in a speech, Southworth fielded the call, got my question, tracked down an answer, and referred me to other articles as well as other people I might want to contact. I don't think Branscomb was ever aware of my call, yet I felt quite well attended to and never minded not talking to Branscomb AT ALL.

c) Be capable of reading and absorbing the content of memos you receive, so that he/she is hip to what is going on around AtariLand, and can figure out whether X really needs to see you right away or if next week will do. You need a HIGHLY INFORMED gatekeeper; uninformed brute force won't do.

If your assistant can do all of the above, it will both save you a lot of time as well as improve relations with the rest of the staff and outsiders who require more stroking than you can supply personally.

Ideally, the person we are looking for combines excellent communication skills, ala Wanda, and a good grasp of the broader goals of our work. Further, the person should have a basic understanding of the technical issues involved, plus the ABILITY to go much further. My guess is that we're looking for someone with an advanced college degree and at least two years of experience in a related area. Presumably, this is a job the person would probably grow out of. For example, the person doesn't see him or herself as an assistant, but would welcome the opportunity to work with you for a number of years before moving on to something else.
If you decide that you do want to get an assistant as I've described, I would be more than happy to help in the search.

cc: Chris Jeffers, Wanda Royse